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# PowerFlex® 700H

**TECHNICAL DATA**

## ADJUSTABLE FREQUENCY AC DRIVE

ALLEN-BRADLEY • ROCKWELL SOFTWARE

Rockwell Automation

## Table of Contents

**Description . . . . . Page**
Product Description . . . . . 4
Key Features and Benefits . . . . . 4
Standard Drives . . . . . 6
Catalog Number Explanation . . . . . 6
Standard Drives Product Selection . . . . . 7
Factory Installed Options . . . . . 10
User Installed Options . . . . . 12
Installation Considerations. . . . . 19
Cable Recommendations . . . . . 30
Drive Ratings . . . . . 32
Drive Fuse & Circuit Breaker Ratings . . . . . 38
Maximum Motor Cable Lengths . . . . . 46
Minimum Mounting Clearances . . . . . 49
Frame to AC Drive Rating Cross Reference . . . . . 52
Frame to DC Drive Rating Cross Reference . . . . . 52
Approximate Dimensions . . . . . 53
Derating Guidelines . . . . . 61
Standard Drive Specifications . . . . . 72
Configured Drives Program . . . . . 73
Description . . . . . 73
Target Lead Times. . . . . 73
Catalog Number Explanation . . . . . 74
Configured Drives Product Selection . . . . . 76
Factory Installed Options . . . . . 78
Enclosure Options. . . . . 85
Configured Drives Codes and Standards . . . . . 86

## Reference Materials

For additional PowerFlex 700H Drive data and information, refer to the following publications:

| Title | Publication | Available... |
|---|---|---|
| PowerFlex 700H Drives Programming Manual | 20C-PM001... | www.rockwellautomation.com/literature |
| PowerFlex 700H Quick Start - Frame 9-12 | 20C-QS001... | |
| PowerFlex 700S and 700H Installation Instructions (Frames 9 - 14) | PFLEX-IN006... | |
| Wiring and Grounding for PWM AC Drives | DRIVES-IN001... | |
| Safety Guidelines for the Application, Installation and Maintenance of Solid State Control | SGI-1.1... | |
| A Global Reference Guide for Reading Schematic Diagrams | 100-2.10... | |
| Guarding Against Electrostatic Damage | 8000-4.5.2... | |

For Allen-Bradley Drives Technical Support:

| Title | Online at... |
|---|---|
| Allen-Bradley Drives Technical Support | www.ab.com/support/abdrives<br>**or**<br>call M-F, 7:00a.m. to 6:00p.m. Central STD time: 1.262.512.8176 |

## Product Description

The PowerFlex 700H AC drive offers a cost-effective, variable speed applications. It is designed to meet the demands for space, flexibility and performance. The many features allow the user to easily configure the drive for most application needs. Ratings currently available include 200 to 1900 HP output at 480V AC, 150 to 2400 HP at 600V AC and 160 to 2000 kW at 690V AC input.

An LCD Human Interface Module (also used with the PowerFlex® 70, 700 and 700S) provides text for startup, metering, programming, and troubleshooting.

PowerFlex 700H AC drives are configurable for Volts-per-Hertz or Sensorless Vector control modes to meet a wide variety of application needs. This control is housed in a module which is separately removable from the power structure. The control module is the same for all drive ratings, simplifying installation and maintenance for the entire product line. Optional I/O is available as 24V DC or 115V AC.

Optional internal communication modules are available as user-installed kits. These provide fast and efficient control and/or data exchange with host controllers over popular interfaces. These interfaces include; DeviceNet™, ControlNet™, Ethernet/IP, Profibus, Interbus, Remote I/O, Serial Communications and other open control and communication networks. PC tools such as DriveExplorer™ and DriveTools™ SP assist with programming, monitoring and troubleshooting the PowerFlex 700H.

## Key Features and Benefits

### Excellent Speed Control Performance

- Open-loop speed control with slip compensation
- Excellent torque at low speeds for demanding speed control applications
- Configurable for Volts-per-Hertz or Sensorless Vector control modes for a wide variety of applications
- ATEX certified option for drives that operate in potentially explosive environments

### Flexible Programming, Hardware, and Communication Interfaces.

- Advanced features and parameter set modeled after the PowerFlex® 700 AC drive.
- Standard I/O includes either 24V or 115V digital I/O plus analog I/O.
- NetLinx communication options, including DeviceNet™, ControlNet™, and EtherNet/IP™ networks.

### Easy to Use

- Full-featured LCD Human Interface Module (HIM) with multi-line and multi-lingual display simplifies programming.
  - Large and easy to read 7 line x 21 character backlit display
  - Variety of languages (English, French, German, Italian, Spanish, Portuguese, Dutch)
  - Alternate function keys for shortcuts to common tasks
  - “Calculator-like” number pad for fast and easy data entry (Full Numeric version only)
  - Control keys for local start, stop, speed, and direction
  - Remote versions for panel mount application

- S.M.A.R.T. Start and assisted startup routines in the LCD HIM allow for easy configuring and tuning of the drive.
- Pull-apart control terminal blocks allow for easy wiring and quick disconnect of I/O wiring.
- Easy-to-remove control module is common among all PowerFlex 700H power ratings.
- Optimized global voltage settings designed to worldwide standards allow quick set-up anywhere in the world.
- PC-based configuration tools include:
  - DriveExplorer™ and DriveExplorer Lite - A simple and flexible “On-line” tool for monitoring and configuration while connected to a drive.
  - DriveTools™ SP - A suite of software tools which provide an intuitive means for programming, troubleshooting and maintaining Allen-Bradley AC & DC drives.

### Premier Integration with PowerFlex Drives

For simplified AC drive start-up and reduced development time using the Allen-Bradley® Logix control platform, we’ve integrated PowerFlex® AC drive configuration with RSLogix™ 5000 software. This single-software approach simplifies parameter and tag programming while still allowing stand-alone drive software tool use on the factory floor.

### Industry-Standard Packaging

- Modular design and high degree of power structure commonality with equivalent PowerFlex® 700S AC drive ratings for reduced spare parts stocking.
- Standard floor-standing cabinet designs (frame 10 and larger) for compact stand-alone drive applications or multi-drive lineups.
- Along with IP21/UL Type 1 (NEMA 1) package options, many PowerFlex 700H drive ratings are also available in an IP54/UL Type 12 (NEMA 12) package
- Option of internally mounted, or door-mounted NEMA 1 or NEMA 4/12 operator interface
- Line reactor on AC input for all ratings

### Support

Rockwell Automation is committed to maintaining and supporting Allen-Bradley drives and installations. Included in this commitment is start-up support and consultation for drive applications.

#### ProtectionPlus Drive Start-Up

With ProtectionPlus Drives Start-Up Services from Rockwell Automation, users can leverage the extensive product and industry experience of Rockwell Automation technicians to quickly commission drives and reduce the time between integration and actual start-up.

ProtectionPlus Drive Start-Up Services verify drive installation to ensure proper electrical, mechanical and environmental criteria are met. This includes verification of power and I/O wiring to the drive, custom drive configuration/tuning to meet application specific requirements, and diagnosing/troubleshooting problems that occur during a standalone drive start-up. ProtectionPlus can also extend an eligible product parts warranty and add a labor warranty. For more information about onsite support services, including ProtectionPlus Drives Services, contact your local Rockwell Automation sales office or authorized distributor, or visit: http://www.rockwellautomation.com/services/onsite/

## *Standard Drives*

### Catalog Number Explanation

| Position | 1-3 | 4 | 5-7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 20C | D | 261 | A | 3 | A | Y | N | B | N | N | 0 |
| | *a* | *b* | *c* | *d* | *e* | *f* | *g* | *h* | *i* | *j* | *k* | *l* |

*a*

| Drive | |
|---|---|
| Code | Type |
| 20C | PowerFlex 700H |

*b*

| Voltage Rating | | |
|---|---|---|
| Code | Voltage | Ph. |
| C | 400V AC | 3 |
| D | 480V AC | 3 |
| E | 600V AC | 3 |
| F | 690V AC | 3 |

*c1*

| Rating | | |
|---|---|---|
| 400V, 50Hz Input | | |
| Code | Amps - ND (HD) | kW - ND (HD) |
| 261 | 261 (205) | 132 (110) |
| 300 | 300 (245) | 160 (132) |
| 385 | 385 (300) | 200 (160) |
| 460 | 460 (385) | 250 (200) |
| 500 | 500 (420) | 250 (250) |
| 590 | 590 (520) | 315 (250) |
| 650 | 650 (590) | 355 (315) |
| 730 | 730 (650) | 400 (355) |
| 820 | 820 (730) | 450 (400) |
| 920 | 920 (820) | 500 (450) |
| 1K0 | 1030 (920) | 560 (500) |
| 1K1 | 1150 (1030) | 630 (560) |
| 1K3 | 1300 (1150) | 710 (630) |
| 1K4 | 1450 (1200) | 800 (710) |
| 1K7 | 1770 (1600) | 1000 (900) |
| 2K1 | 2150 (1940) | 1200 (1100) |

*c2*

| Rating | | |
|---|---|---|
| 480V, 60Hz Input | | |
| Code | Amps - ND (HD) | Hp - ND (HD) |
| 261 | 261 (205) | 200 (150) |
| 300 | 300 (245) | 250 (200) |
| 385 | 385 (300) | 300 (250) |
| 460 | 460 (385) | 350 (300) |
| 500 | 500 (420) | 450 (350) |
| 590 | 590 (520) | 500 (450) |
| 650 | 650 (590) | 500 (500) |
| 730 | 730 (650) | 600 (500) |
| 820 | 820 (730) | 700 (600) |
| 920 | 920 (820) | 800 (700) |
| 1K0 | 1030 (920) | 900 (800) |
| 1K1 | 1150 (1030) | 1000 (900) |
| 1K3 | 1300 (1150) | 1100 (1000) |
| 1K4 | 1450 (1200) | 1250 (1000) |
| 1K7 | 1770 (1600) | 1500 (1400) |
| 2K1 | 2150 (1940) | 1900 (1700) |

*c3*

| Rating | | |
|---|---|---|
| 600V, 60Hz Input | | |
| Code | Amps - ND (HD) | Hp - ND (HD) |
| 170 | 170 (144) | 150 (150) |
| 208 | 208 (170) | 200 (150) |
| 261 | 261 (208) | 250 (200) |
| 325 | 325 (261) | 350 (250) |
| 385 | 385 (325) | 400 (350) |
| 416 | 416 (325) | 450 (350) |
| 460 | 460 (385) | 500 (400) |
| 502 | 502 (460) | 500 (500) |
| 590 | 590 (502) | 600 (500) |
| 650 | 650 (590) | 700 (650) |
| 750 | 750 (650) | 800 (700) |
| 820 | 820 (750) | 900 (700) |
| 920 | 920 (820) | 1000 (900) |
| 1K0 | 1030 (920) | 1100 (1000) |
| 1K1 | 1180 (1030) | 1300 (1100) |
| 1K5 | 1500 (1300) | 1600 (1400) |
| 1K9 | 1900 (1500) | 2000 (1600) |
| 2K2 | 2250 (1900) | 2400 (2000) |

*c4*

| Rating | | |
|---|---|---|
| 690V, 50Hz Input | | |
| Code | Amps - ND (HD) | kW - ND (HD) |
| 170 | 170 (144) | 160 (132) |
| 208 | 208 (170) | 200 (160) |
| 261 | 261 (208) | 250 (200) |
| 325 | 325 (261) | 315 (250) |
| 385 | 385 (325) | 355 (315) |
| 416 | 416 (325) | 400 (315) |
| 460 | 460 (385) | 450 (355) |
| 502 | 502 (460) | 500 (450) |
| 590 | 590 (502) | 560 (500) |
| 650 | 650 (590) | 630 (560) |
| 750 | 750 (650) | 710 (630) |
| 820 | 820 (750) | 800 (630) |
| 920 | 920 (820) | 900 (800) |
| 1K0 | 1030 (920) | 1000 (900) |
| 1K1 | 1180 (1030) | 1100 (1000) |
| 1K5 | 1500 (1300) | 1500 (1300) |
| 1K9 | 1900 (1500) | 1900 (1500) |
| 2K2 | 2250 (1900) | 2300 (1900) |

*d*

| Enclosure | |
|---|---|
| Code | Enclosure |
| A | IP21, NEMA Type 1 (Frame 9) Rittal Enclosure (Frames 10 & Up) |
| B | IP20, NEMA Type 1, MCC § |
| H | IP54, NEMA Type 12, Rittal § |
| K | IP20, NEMA Type 1, MCC with Conformal Coat § |
| M | IP21, NEMA Type 1 (Frame 9) Rittal Enclosure (Frames 10 & Up) with Conformal Coat |
| W | IP54, NEMA Type 12, Rittal with Conformal Coat § |

§ Frame 10 & up only.

*e*

| HIM | |
|---|---|
| Code | Operator Interface |
| 0 | Blank Cover |
| 3 | Full Numeric LCD, Drive Mounted |
| C | Full Numeric LCD, Door Mount ∗ |

∗ IP21, NEMA Type 1 Frame 10 & up only.

## Catalog Number Explanation, Continued

*f*

| Documentation | |
|---|---|
| Code | Type |
| A | Manual |

*g*

| Brake | |
|---|---|
| Code | w/Brake IGBT ❄ |
| Y | Yes |
| N | No |

❄ Brake IGBT is available on Frame 9 drives only.

*h*

| Brake Resistor | |
|---|---|
| Code | w/Resistor |
| N | No |

*i*

| Emission | | | |
|---|---|---|---|
| Code | CE Filter | CM Choke | dv/dt Filter |
| B | Yes | No | No |
| N ‡ | No | No | No |
| E ♣ | Yes | No | Yes |

‡ For use on ungrounded or resistive grounded distribution systems (Frame 9 drives only).

♣ Output dv/dt filter is only available on Frame 14 drives.

*j*

| Comm Slot | |
|---|---|
| Code | Version |
| N | None |

*k*

| I/O | |
|---|---|
| Code | I/O Volts |
| A | 24V DC |
| B | 115V AC |
| G | 24V DC with Disable |
| N | None |

*l*

| Feedback | |
|---|---|
| Code | Type |
| 0 | None |

## Standard Drives Product Selection

IP21, NEMA Type 1 (Position d = A)

380 - 500V AC, Three-Phase Drives

| 480V AC Input | | | | | 380-400V AC Input | | | | | IP21, NEMA Type 1 (4)(5) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Output Amps | | | Normal | Heavy | Output Amps | | | Normal | Heavy | | |
| Cont. (1) | 1 Min. | 2 Sec. (3) | Duty HP | Duty HP | Cont. (1) | 1 Min. | 2 Sec. (3) | Duty kW | Duty kW | Cat. No. 20CD ... | Frame Size |
| 261 (205) | 287 (308) | 410 (410) | 200 | 150 | 261 (205) | 287 (308) | 410 (410) | 132 | 110 | 261A0ANNBNN0 | 9 |
| 300 (245) | 330 (368) | 450 (490) | 250 | 200 | 300 (245) | 330 (368) | 450 (490) | 160 | 132 | 300A0ANNBNN0 | 9 |
| 385 (300) | 424 (450) | 600 (600) | 300 | 250 | 385 (300) | 424 (450) | 600 (600) | 200 | 160 | 385A0ANNBNN0 | 10 |
| 460 (385) | 506 (578) | 770 (770) | 350 | 300 | 460 (385) | 506 (578) | 770 (770) | 250 | 200 | 460A0ANNBNN0 | 10 |
| 500 (420) | 550 (630) | 750 (840) | 450 | 350 | 500 (420) | 550 (630) | 750 (840) | 250 | 250 | 500A0ANNBNN0 | 10 |
| 590 (520) | 649 (780) | 956 (956) | 500 | 450 | 590 (520) | 649 (780) | 956 (956) | 315 | 250 | 590A0ANNBNN0 | 11 |
| 650 (590) | 715 (885) | 1062 (1062) | 500 | 500 | 650 (590) | 715 (885) | 1062 (1062) | 355 | 315 | 650A0ANNBNN0 | 11 |
| 730 (650) | 803 (975) | 1095 (1170) | 600 | 500 | 730 (650) | 803 (975) | 1095 (1170) | 400 | 355 | 730A0ANNBNN0 | 11 |
| 820 (730) | 902 (1095) | 1230 (1314) | 700 | 600 | 820 (730) | 902 (1095) | 1230 (1314) | 450 | 400 | 820A0ANNBNN0 | 12 |
| 920 (820) | 1012 (1230) | 1380 (1476) | 800 | 700 | 920 (820) | 1012 (1230) | 1380 (1476) | 500 | 450 | 920A0ANNBNN0 | 12 |
| 1030 (920)(2) | 1133 (1370) | 1555 (1600) | 900 | 800 | 1030 (920)(2) | 1133 (1370) | 1555 (1600) | 560 | 500 | 1K0A0ANNBNN0 | 12 |
| 1150 (1030) | 1265 (1545) | 1620 (1620) | 1000 | 900 | 1150 (1030) | 1265 (1545) | 1620 (1620) | 630 | 560 | 1K1A0ANNBNN0 | 13 |
| 1300 (1150) | 1430 (1725) | 2079 (2079) | 1100 | 1000 | 1300 (1150) | 1430 (1725) | 2079 (2079) | 710 | 630 | 1K3A0ANNBNN0 | 13 |
| 1450 (1200) | 1595 (1800) | 2175 (2400) | 1250 | 1000 | 1450 (1200) | 1595 (1800) | 2175 (2400) | 800 | 710 | 1K4A0ANNBNN0 | 13 |
| 1770 (1600) | 1947 (2400) | 2655 (2880) | 1500 | 1400 | 1770 (1600) | 1947 (2400) | 2655 (2880) | 1000 | 900 | 1K7A0ANNENN0 | 14 |
| 2150 (1940) | 2365 (2910) | 3225 (3492) | 1900 | 1700 | 2150 (1940) | 2365 (2910) | 3225 (3492) | 1200 | 1100 | 2K1A0ANNENN0 | 14 |

(1) These drives have dual current ratings; normal duty applications and heavy duty applications (in parenthesis). The drive may be operated at either rating.

(2) Heavy duty rating is limited to 35° C surrounding air.

(3) The 2 sec. output current is only available at initial start or drive operating at light load.

(4) Frames 10 & up include a Rittal enclosure.

(5) Drives listed Do Not include a Control and I/O option. Refer to page 11 for available options.

## 600 - 690V AC, Three-Phase Drives

| 600V AC Input | | | | | 690V AC Input | | | | | IP21, NEMA Type 1 [5][6] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Output Amps | | | Normal Duty HP | Heavy Duty HP | Output Amps | | | Normal Duty kW | Heavy Duty kW | | |
| Cont. [1] | 1 Min. | 2 Sec. [4] | | | Cont. [1] | 1 Min. | 2 Sec. [3] | | | Cat. No. 20CE ... | Frame Size |
| 170 (144) | 187 (216) | 245 (245) | 150 | 150 | 170 (144) | 187 (216) | 245 (245) | 160 | 132 | 170A0ANNBNN0 | 9 |
| 208 (170) | 230 (250) | 289 (289) | 200 | 150 | 208 (170) | 230 (250) | 289 (289) | 200 | 160 | 208A0ANNBNN0 | 9 |
| 261 (208) | 287 (312) | 375 (375) | 250 | 200 | 261 (208) | 287 (312) | 375 (375) | 250 | 200 | 261A0ANNBNN0 | 10 |
| 325 (261) | 358 (392) | 470 (470) | 350 | 250 | 325 (261) | 358 (392) | 470 (470) | 315 | 250 | 325A0ANNBNN0 | 10 |
| 385 (325) | 424 (488) | 585 (585) | 400 | 350 | 385 (325) | 424 (488) | 585 (585) | 355 | 315 | 385A0ANNBNN0 | 10 |
| 416 (325)[2] | 458 (488) | 585 (585) | 450 | 350 | 416 (325)[2] | 458 (488) | 585 (585) | 400 | 315 | 416A0ANNBNN0 | 10 |
| 460 (385) | 506 (578) | 693 (693) | 500 | 400 | 460 (385) | 506 (578) | 693 (693) | 450 | 355 | 460A0ANNBNN0 | 11 |
| 502 (460) | 552 (690) | 828 (828) | 500 | 500 | 502 (460) | 552 (690) | 828 (828) | 500 | 450 | 502A0ANNBNN0 | 11 |
| 590 (502) | 649 (753) | 885 (904) | 600 | 500 | 590 (502) | 649 (753) | 885 (904) | 560 | 500 | 590A0ANNBNN0 | 11 |
| 650 (590) | 715 (885) | 1062 (1062) | 700 | 650 | 650 (590) | 715 (885) | 1062 (1062) | 630 | 560 | 650A0ANNBNN0 | 12 |
| 750 (650) | 825 (975) | 1170 (1170) | 800 | 700 | 750 (650) | 825 (975) | 1170 (1170) | 710 | 630 | 750A0ANNBNN0 | 12 |
| 820 (750)[2] | 902 (975) | 1170 (1170) | 900 | 700 | 820 (750)[2] | 902 (975) | 1170 (1170) | 800 | 630 | 820A0ANNBNN0 | 12 |
| 920 (820) | 1012 (1230) | 1380 (1410) | 1000 | 900 | 920 (820) | 1012 (1230) | 1380 (1410) | 900 | 800 | 920A0ANNBNN0 | 13 |
| 1030 (920) | 1133 (1380) | 1545 (1755) | 1100 | 1000 | 1030 (920) | 1133 (1380) | 1545 (1755) | 1000 | 900 | 1K0A0ANNBNN0 | 13 |
| 1180 (1030) | 1298 (1463) | 1755 (1755) | 1300 | 1100 | 1180 (1030) | 1298 (1463) | 1755 (1755) | 1100 | 1000 | 1K1A0ANNBNN0 | 13 |
| 1500 (1300) | 1650 (1950) | 2250 (2340) | 1600 | 1400 | 1500 (1300) | 1650 (1950) | 2250 (2340) | 1500 | 1300 | 1K5A0ANNENN0 | 14 |
| 1900 (1500) | 2090 (2250) | 2700 (2700) | 2000 | 1600 | 1900 (1500) | 2090 (2250) | 2700 (2700) | 1900 | 1500 | 1K9A0ANNENN0 | 14 |
| 2250 (1900)[3] | 2475 (2782) | 3335 (3335) | 2400 | 2000 | 2250 (1900)[3] | 2475 (2782) | 3335 (3335) | 2300 | 1900 | 2K2A0ANNENN0 | 14 |

(1) These drives have dual current ratings; normal duty applications and heavy duty applications (in parenthesis). The drive may be operated at either rating.
(2) Normal duty rating is limited to 35° C surrounding air.
(3) Normal and heavy duty rating is limited to 35° C surrounding air.
(4) The 2 sec. output current is only available at initial start or drive operating at light load.
(5) Frames 10 & up include a Rittal enclosure.
(6) Drives listed Do Not include a Control and I/O option. Refer to page 11 for available options.

## IP20, NEMA Type 1, CENTERLINE® 2100 MCC (Position d = B)

## 380 - 500V AC, Three-Phase Drives

| 480V AC Input | | | | | 380-400V AC Input | | | | | IP20, NEMA Type 1 [4] | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Output Amps | | | Normal Duty HP | Heavy Duty HP | Output Amps | | | Normal Duty kW | Heavy Duty kW | | |
| Cont. [1] | 1 Min. | 2 Sec. [3] | | | Cont. [1] | 1 Min. | 2 Sec. [3] | | | Cat. No. 20CD ... | Frame Size |
| 385 (300) | 424 (450) | 600 (600) | 300 | 250 | 385 (300) | 424 (450) | 600 (600) | 200 | 160 | 385B0ANNBNN0 | 10 |
| 460 (385) | 506 (578) | 770 (770) | 350 | 300 | 460 (385) | 506 (578) | 770 (770) | 250 | 200 | 460B0ANNBNN0 | 10 |
| 500 (420) | 550 (630) | 750 (840) | 450 | 350 | 500 (420) | 550 (630) | 750 (840) | 250 | 250 | 500B0ANNBNN0 | 10 |
| 590 (520) | 649 (780) | 956 (956) | 500 | 450 | 590 (520) | 649 (780) | 956 (956) | 315 | 250 | 590B0ANNBNN0 | 11 |
| 650 (590) | 715 (885) | 1062 (1062) | 500 | 500 | 650 (590) | 715 (885) | 1062 (1062) | 355 | 315 | 650B0ANNBNN0 | 11 |
| 730 (650) | 803 (975) | 1095 (1170) | 600 | 500 | 730 (650) | 803 (975) | 1095 (1170) | 400 | 355 | 730B0ANNBNN0 | 11 |
| 820 (730) | 902 (1095) | 1230 (1314) | 700 | 600 | 820 (730) | 902 (1095) | 1230 (1314) | 450 | 400 | 820B0ANNBNN0 | 12 |
| 920 (820) | 1012 (1230) | 1380 (1476) | 800 | 700 | 920 (820) | 1012 (1230) | 1380 (1476) | 500 | 450 | 920B0ANNBNN0 | 12 |
| 1030 (920)[2] | 1133 (1370) | 1555 (1600) | 900 | 800 | 1030 (920)[2] | 1133 (1370) | 1555 (1600) | 560 | 500 | 1K0B0ANNBNN0 | 12 |

(1) These drives have dual current ratings; normal duty applications and heavy duty applications (in parenthesis). The drive may be operated at either rating.
(2) Heavy duty rating is limited to 35° C surrounding air.
(3) The 2 sec. output current is only available at initial start or drive operating at light load.
(4) Drives listed Do Not include a Control and I/O option. Refer to page 11 for available options.

## 600V AC, Three-Phase Drives

| 600V AC Input | | | | | IP20, NEMA Type 1 (4) | |
|---|---|---|---|---|---|---|
| Output Amps | | | | | | |
| Cont. (1) | 1 Sec. | 2 Sec. (3) | Normal Duty HP | Heavy Duty HP | Cat. No. 20CE … | Frame Size |
| 261 (208) | 287 (312) | 375 (375) | 250 | 200 | 261B0ANNBNN0 | 10 |
| 325 (261) | 358 (392) | 470 (470) | 350 | 250 | 325B0ANNBNN0 | 10 |
| 325 (261) | 358 (392) | 470 (470) | 350 | 250 | 325B0ANNBNN0 | 10 |
| 385 (325) | 424 (488) | 585 (585) | 400 | 350 | 385B0ANNBNN0 | 10 |
| 416 (325)(2) | 458 (488) | 585 (585) | 450 | 350 | 416B0ANNBNN0 | 10 |
| 460 (385) | 506 (578) | 693 (693) | 500 | 400 | 460B0ANNBNN0 | 11 |
| 502 (460) | 552 (690) | 828 (828) | 500 | 500 | 502B0ANNBNN0 | 11 |
| 590 (502) | 649 (753) | 885 (904) | 600 | 500 | 590B0ANNBNN0 | 11 |
| 650 (590) | 715 (885) | 1062 (1062) | 700 | 650 | 650B0ANNBNN0 | 12 |
| 750 (650) | 825 (975) | 1170 (1170) | 800 | 700 | 750B0ANNBNN0 | 12 |
| 820 (750)(2) | 902 (975) | 1170 (1170) | 900 | 700 | 820B0ANNBNN0 | 12 |

(1) These drives have dual current ratings; normal duty applications and heavy duty applications (in parenthesis). The drive may be operated at either rating.
(2) Normal duty rating is limited to 35° C surrounding air.
(3) The 2 sec. output current is only available at initial start or drive operating at light load.
(4) Drives listed Do Not include a Control and I/O option. Refer to page 11 for available options.

### IP54, NEMA Type 12, Rittal (Position d = H)

## 380-500V AC, Three-Phase Drives

| 480V AC Input | | | | | 380-400V AC Input | | | | | IP54, NEMA Type 12 (4) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Output Amps | | | Normal | Heavy | Output Amps | | | Normal | Heavy | | |
| Cont. (1) | 1 Min. | 2 Sec. (3) | Duty HP | Duty HP | Cont. (1) | 1 Min. | 2 Sec. (3) | Duty kW | Duty kW | Cat. No. 20CD … | Frame Size |
| 385 (300) | 424 (450) | 600 (600) | 300 | 250 | 385 (300) | 424 (450) | 600 (600) | 200 | 160 | 385H0ANNBNN0 | 10 |
| 460 (385) | 506 (578) | 770 (770) | 350 | 300 | 460 (385) | 506 (578) | 770 (770) | 250 | 200 | 460H0ANNBNN0 | 10 |
| 500 (420) | 550 (630) | 750 (840) | 450 | 350 | 500 (420) | 550 (630) | 750 (840) | 250 | 250 | 500H0ANNBNN0 | 10 |
| 590 (520) | 649 (780) | 956 (956) | 500 | 450 | 590 (520) | 649 (780) | 956 (956) | 315 | 250 | 590H0ANNBNN0 | 11 |
| 650 (590) | 715 (885) | 1062 (1062) | 500 | 500 | 650 (590) | 715 (885) | 1062 (1062) | 355 | 315 | 650H0ANNBNN0 | 11 |
| 730 (650) | 803 (975) | 1095 (1170) | 600 | 500 | 730 (650) | 803 (975) | 1095 (1170) | 400 | 355 | 730H0ANNBNN0 | 11 |
| 820 (730) | 902 (1095) | 1230 (1314) | 700 | 600 | 820 (730) | 902 (1095) | 1230 (1314) | 450 | 400 | 820H0ANNBNN0 | 12 |
| 920 (820) | 1012 (1230) | 1380 (1476) | 800 | 700 | 920 (820) | 1012 (1230) | 1380 (1476) | 500 | 450 | 920H0ANNBNN0 | 12 |
| 1030 (920)(2) | 1133 (1370) | 1555 (1600) | 900 | 800 | 1030 (920)(2) | 1133 (1370) | 1555 (1600) | 560 | 500 | 1K0H0ANNBNN0 | 12 |
| 1150 (1030) | 1265 (1545) | 1620 (1620) | 1000 | 900 | 1150 (1030) | 1265 (1545) | 1620 (1620) | 630 | 560 | 1K1H0ANNBNN0 | 13 |
| 1300 (1150) | 1430 (1725) | 2079 (2079) | 1200 | 1000 | 1300 (1150) | 1430 (1725) | 2079 (2079) | 710 | 630 | 1K3H0ANNBNN0 | 13 |
| 1450 (1200) | 1595 (1800) | 2175 (2400) | 1250 | 1000 | 1450 (1200) | 1595 (1800) | 2175 (2400) | 800 | 710 | 1K4H0ANNBNN0 | 13 |
| 1770 (1600) | 1947 (2400) | 2655 (2880) ) | 1500 | 1400 | 1770 (1600) | 1947 (2400) | 2655 (2880) | 1000 | 900 | 1K7H0ANNENN0 | 14 |
| 2150 (1940) | 2365 (2910) | 3225 (3492 | 1900 | 1700 | 2150 (1940) | 2365 (2910) | 3225 (3492) | 1200 | 1100 | 2K1H0ANNENN0 | 14 |

(1) These drives have dual current ratings; normal duty applications and heavy duty applications (in parenthesis). The drive may be operated at either rating.
(2) Heavy duty rating is limited to 35° C surrounding air.
(3) The 2 sec. output current is only available at initial start or drive operating at light load.
(4) Drives listed Do Not include a Control and I/O option. Refer to page 11 for available options.

## 600-690V AC, Three-Phase Drives

| 600V AC Input | | | | | 690V AC Input | | | | | IP54, NEMA Type 12 (5) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Output Amps | | | Normal | Heavy | Output Amps | | | Normal | Heavy | | |
| Cont. (1) | 1 Min. | 2 Sec. (4) | Duty HP | Duty HP | Cont. (1) | 1 Min. | 2 Sec. (4) | Duty kW | Duty kW | Cat. No. 20CE… | Frame Size |
| 261 (208) | 287 (312) | 375 (375) | 250 | 200 | 261 (208) | 287 (312) | 375 (375) | 250 | 200 | 261H0ANNBNN0 | 10 |
| 325 (261) | 358 (392) | 470 (470) | 350 | 250 | 325 (261) | 358 (392) | 470 (470) | 315 | 250 | 325H0ANNBNN0 | 10 |
| 385 (325) | 424 (488) | 585 (585) | 400 | 350 | 385 (325) | 424 (488) | 585 (585) | 355 | 315 | 385H0ANNBNN0 | 10 |
| 416 (325)(2) | 458 (488) | 585 (585) | 450 | 350 | 416 (325)(2) | 458 (488) | 585 (585) | 400 | 315 | 416H0ANNBNN0 | 10 |
| 460 (385) | 506 (578) | 693 (693) | 500 | 400 | 460 (385) | 506 (578) | 693 (693) | 450 | 355 | 460H0ANNBNN0 | 11 |
| 502 (460) | 552 (690) | 828 (828) | 500 | 500 | 502 (460) | 552 (690) | 828 (828) | 500 | 450 | 502H0ANNBNN0 | 11 |
| 590 (502) | 649 (753) | 885 (904) | 600 | 500 | 590 (502) | 649 (753) | 885 (904) | 560 | 500 | 590H0ANNBNN0 | 11 |

| 600V AC Input | | | | | 690V AC Input | | | | | IP54, NEMA Type 12 (5) | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Output Amps | | | Normal | Heavy | Output Amps | | | Normal | Heavy | | |
| Cont. (1) | 1 Min. | 2 Sec. (4) | Duty HP | Duty HP | Cont. (1) | 1 Min. | 2 Sec. (4) | Duty kW | Duty kW | Cat. No. 20CE… | Frame Size |
| 650 (590) | 715 (885) | 1062 (1062) | 700 | 650 | 650 (590) | 715 (885) | 1062 (1062) | 630 | 560 | 650H0ANNBNN0 | 12 |
| 750 (650) | 825 (975) | 1170 (1170) | 800 | 700 | 750 (650) | 825 (975) | 1170 (1170) | 710 | 630 | 750H0ANNBNN0 | 12 |
| 820 (750)(2) | 902 (975) | 1170 (1170) | 900 | 700 | 820 (750)(2) | 902 (975) | 1170 (1170) | 800 | 630 | 820H0ANNBNN0 | 12 |
| 920 (820) | 1012 (1230) | 1380 (1410) | 1000 | 900 | 920 (820) | 1012 (1230) | 1380 (1410) | 900 | 800 | 920H0ANNBNN0 | 13 |
| 1030 (920) | 1133 (1380) | 1545 (1755) | 1100 | 1000 | 1030 (920) | 1133 (1380) | 1545 (1755) | 1000 | 900 | 1K0H0ANNBNN0 | 13 |
| 1180 (1030) | 1298 (1463) | 1755 (1755) | 1300 | 1100 | 1180 (1030) | 1298 (1463) | 1755 (1755) | 1100 | 1000 | 1K1H0ANNBNN0 | 13 |
| 1500 (1300) | 1650 (1950) | 2250 (2340) | 1600 | 1400 | 1500 (1300) | 1650 (1950) | 2250 (2340) | 1500 | 1300 | 1K5H0ANNENN0 | 14 |
| 1900 (1500) | 2090 (2250) | 2700 (2700) | 2000 | 1600 | 1900 (1500) | 2090 (2250) | 2700 (2700) | 1900 | 1500 | 1K9H0ANNENN0 | 14 |
| 2250 (1900)(3) | 2475 (2782) | 3335 (3335) | 2400 | 2000 | 2250 (1900)(3) | 2475 (2782) | 3335 (3335) | 2300 | 1900 | 2K2H0ANNENN0 | 14 |

(1) These drives have dual current ratings; normal duty applications and heavy duty applications (in parenthesis). The drive may be operated at either rating.
(2) Normal duty rating is limited to 35° C surrounding air.
(3) Normal and heavy duty rating is limited to 35° C surrounding air.
(4) The 2 sec. output current is only available at initial start or drive operating at light load.
(5) Drives listed Do Not include a Control and I/O option. Refer to page 11 for available options.

## Factory Installed Options

### Conformal Coat (Position d = K, M or W)

| Description | Frame |
|---|---|
| Conformal Coat | 9 |
| | 10 |
| Printed circuit boards are coated to provide improved resistance to dust and moisture. Consult factory for additional details. | 11 |
| | 12 |
| | 13 |
| | 14 |

### Human Interface and Wireless Interface Modules IP21 - NEMA/UL Type 1 (Position e)

Cat. Code: 0
No HIM
(Blank Plate)

Cat. Code: 3
LCD Display,
Full Numeric
Keypad

Cat. Code: C
Door Mounted Bezel,
LCD Display,
Full Numeric Keypad
Frame 10 & up

**Important:** For additional factory installed options, refer to the Configured Drives Program.

### Internal Brake IGBT

| Brake IGBT | Frame | Cat. Code (Position g) |
|---|---|---|
| None | 9…14 | N |
| Optional | 9 | Y |

## Internal EMC Filter and Common Mode Choke

| Drive Input Voltage | Frame | Description | Cat. Code (Position i) |
|---|---|---|---|
| 380-500V AC & 600-690V AC | 9-13 | with CE Filter, No Choke, No dv/dt Filter | B |
| 380-500V AC & 600-690V AC | 9 | No CE Filter, No Choke, No dv/dt Filter | N (1) |
| 380-500V AC & 600-690V AC | 14 | with CE Filter, dv/dt Filter, No Choke | E |

(1) For use with ungrounded or resistive grounded distribution systems.

## Control and I/O Options

| Description | Cat. Code (Position k) |
|---|---|
| 24V DC Digital Inputs (6) w/Analog I/O & 115V AC Digital Outputs (3) | A |
| 115V AC Digital Inputs (6) w/Analog I/O & 115V AC Digital Outputs (3) | B |
| 24V DC Digital Inputs (6) w/Analog I/O, 24V DC Disable Inputs (2) & 115V AC Digital Outputs (2) | G |
| None | N |

## User Installed Options

### Human Interface and Wireless Interface Modules

No HIM
(Blank Plate)
20-HIM-A0

LCD Display,
Full Numeric
Keypad
20-HIM-A3

LCD Display,
Programmer
Only
20-HIM-A5

Wireless Interface
Module
20-WIM-N1

Remote Panel
Mount Wireless
Interface Module
20-WIM-N4S

Remote Panel
Mount LCD Dis-
play, Full Numeric
Keypad
20-HIM-C3S

Remote Panel
Mount LCD Dis-
play, Programmer
Only
20-HIM-C5S

| Description | Handheld/Local (Drive Mount) Cat. No. | Remote (Panel Mount) IP66, UL Type 4x/12 [1] Cat. No. |
|---|---|---|
| No HIM (Blank Plate) | 20-HIM-A0 | – |
| LCD Display, Full Numeric Keypad | 20-HIM-A3 | 20-HIM-C3S [2] |
| LCD Display, Programmer Only | 20-HIM-A5 | 20-HIM-C5S [2] |
| Wireless Interface Module | 20-WIM-N1 | 20-WIM-N4S |

(1) For indoor use only.
(2) Includes a 1202-C30 interface cable (3 meters) for connection to the drive.

### Human Interface Module Accessories

| Description | Cat. No. |
|---|---|
| Bezel Kit for LCD HIMs, NEMA/UL Type 1 [1] | 20-HIM-B1 |
| PowerFlex HIM Interface Cable, 1 m (39 in) [2] | 20-HIM-H10 |
| Cable Kit (Male-Female) [3] | |
| 0.33 Meters (1.1 Feet) | 1202-H03 |
| 1 Meter (3.3 Feet) | 1202-H10 |
| 3 Meter (9.8 Feet) | 1202-H30 |
| 9 Meter (29.5 Feet) | 1202-H90 |
| DPI/SCANport™ One to Two Port Splitter Cable | 1203-S03 |

(1) Includes a 1202-C30 interface cable (3 meters) for connection to the drive.
(2) Required only when HIM is used as handheld or remote.
(3) Required in addition to 20-HIM-H10 for distances up to a total maximum of 10 Meters (32.8 Feet).

## I/O Option Kit

| Description | Slot (1) A | Slot (1) B | Cat. No. |
|---|---|---|---|
| 24V DC Digital Inputs (6) w/Analog I/O | X | | 20C-DA1-A |
| 115V AC Digital Inputs (6) w/Analog I/O | X | | 20C-DA1-B |
| 115V AC Digital Outputs (3) | | X | 20C-DO1 |
| Disable Input Board - 24V DC Disable Inputs (2) & 115V AC Digital Outputs (2) | | X | 20C-DG1 |

(1) Only one card allowed per slot.

## Communication Option Kits

| Description | Cat. No. |
|---|---|
| BACnet® MS/TP RS485 Communication Adapter | 20-COMM-B |
| ControlNet™ Communication Adapter (Coax) | 20-COMM-C |
| ControlNet™ Communication Adapter (Coax) Conformal Coat | 20-COMM-CMX3 |
| DeviceNet™ Communication Adapter | 20-COMM-D |
| DeviceNet™ Communication Adapter Conformal Coat | 20-COMM-DMX3 |
| EtherNet/IP™ Communication Adapter | 20-COMM-E |
| EtherNet/IP™ Communication Adapter Conformal Coat | 20-COMM-EMX3 |
| HVAC Communication Adapter | 20-COMM-H |
| Interbus™ Communication Adapter | 20-COMM-I |
| CANopen® Communication Adapter | 20-COMM-K |
| LonWorks® Communication Adapter | 20-COMM-L |
| Modbus/TCP Communication Adapter | 20-COMM-M |
| PROFIBUS™ DP Communication Adapter | 20-COMM-P |
| ControlNet™ Communication Adapter (Fiber) | 20-COMM-Q |
| Remote I/O Communication Adapter | 20-COMM-R |
| Remote I/O Communication Adapter Conformal Coat | 20-COMM-RMX3 |
| RS485 DF1 Communication Adapter | 20-COMM-S |
| RS485 DF1 Communication Adapter Conformal Coat | 20-COMM-SMX3 |
| External Communications Kit Power Supply | 20-XCOMMAC-PS1 |
| DPI External Communications Kit | 20-XCOMMDC-BASE |
| External DPI I/O Option Board (1) | 20-XCOMMIO-OPT1 |
| Serial Null Modem Adapter | 1203-SNM |
| Smart Self-powered Serial Converter (RS232) includes 1203-SFC and 1202-C10 Cables | 1203-SSS |
| Universal Serial Bus™ (USB) Converter includes 2m USB, 20-HIM-H10 & 22-HIM-H10 Cables | 1203-USB |
| Compact I/O Module (3 Channel) | 1769-SM1 |

(1) For use only with DPI External Communications Kits 20-XCOMM-DCBASE.

## Protective Cover for DC Bus or Internal Brake IGBT Terminals

| Description | Frame | Cat. No. |
|---|---|---|
| Touch Cover - Converts IP00/Open Type drive to IP20/ NEMA/UL Type 1. No wiring space provided. | 9 | 20-OPT-TC |
| Top Hat- Converts IP00/Open Type drive to IP20/ NEMA/UL Type 1. Allows for wiring space. | 9 | 20-OPT-TH |

## 1492 Wiring System Modules and Cables

Wiring System Modules and Cables provide an easy means to extend drive control wiring. A pre-wired cable (available in various lengths) plugs into the appropriate drive I/O terminal block. The remaining cable end plugs into the Wiring Module which provides a terminal block for direct I/O connection. See publication 1492-TD008… for detailed information.

### 1492 Wiring Module and Cable Selection

| 700H Drive I/O | Wiring Module Description | Wiring Module Cat. No. | | Use with Cable (see below…) |
|---|---|---|---|---|
| | | Fixed Terminal Block | Removable Terminal Block | |
| DC Discrete Digital I/O (TB2) | Standard, 264V AC/DC | 1492-IFM20F | 1492-RIFM20F | 1492-CABxxxA7H |
| | Narrow Standard, 132V AC/DC | 1492-IFM20FN | 1492-RIFM20FN | 1492-CABxxxA7H |
| | Extra Terminals (2 per I/O), 264V AC/DC | 1492-IFM20F-2 | 1492-RIFM20F-2 | 1492-CABxxxA7H |
| AC Discrete Digital I/O (20CDA1-B & 20CDO1) | Standard, 264V AC/DC | 1492-IFM20F | 1492-RIFM20F | 1492-CABxxxA7H |
| | Narrow Standard, 132V AC/DC | 1492-IFM20FN | 1492-RIFM20FN | 1492-CABxxxA7H |
| | Extra Terminals (2 per I/O), 264V AC/DC | 1492-IFM20F-2 | 1492-RIFM20F-2 | 1492-CABxxxA7H |
| Analog I/O (TB1) | 6 Channel Isolated - 3 Terminals/Channel | 1492-AIFM6S-3 | 1492-RAIFM6S-3 | 1492-ACABxxxZ7H |

### Pre-Wired Cable Assemblies

| Description | Cat. No. |
|---|---|
| Pre-Wired Cable for Analog I/O | |
| 0.5 Meter (1.6 Feet) | 1492-ACAB005Z7H |
| 1.0 Meter (3.3 Feet) | 1492-ACAB010Z7H |
| 2.5 Meters (8.2 Feet) | 1492-ACAB025Z7H |
| 5.0 Meters (16.4 Feet) | 1492-ACAB050Z7H |
| Pre-Wired Cable for Discrete DC I/O | |
| 0.5 Meter (1.6 Feet) | 1492-CAB005A7H |
| 1.0 Meter (3.3 Feet) | 1492-CAB010A7H |
| 2.5 Meters (8.2 Feet) | 1492-CAB025A7H |
| 5.0 Meters (16.4 Feet) | 1492-CAB050A7H |
| Pre-Wired Cable for Discrete AC I/O | |
| 0.5 Meter (1.6 Feet) | 1492-CAB005B7H |
| 1.0 Meter (3.3 Feet) | 1492-CAB010B7H |
| 2.5 Meters (8.2 Feet) | 1492-CAB025B7H |
| 5.0 Meters (16.4 Feet) | 1492-CAB050B7H |

### Dynamic Brake, Chopper Only Kits

| Description | Rating | Cat. No. |
|---|---|---|
| 380-480V AC | 9A | 1336-WB009 |
| | 35A | 1336-WB035 |
| | 110A | 1336-WB110 |
| 500-600V AC | 9A | 1336-WC009 |
| | 35A | 1336-WC035 |
| | 85A | 1336-WC085 |

### Terminators

| Description (1) | Cat. No. |
|---|---|
| for use with 1.5 kW (2 Hp) & up drives | 1204-TFB2 |

(1) Refer to Appendix A of publication DRIVES-IN001… for selection information.

### Reflected Wave Reduction Modules w/Common Mode Choke

| Description (1) | Cat. No. |
|---|---|
| 17A with Common Mode Choke | 1204-RWC-17-A |

(1) Refer to Appendix A of publication DRIVES-IN001… for selection information.

### Reflected Wave Reduction Modules

| Voltage | Drive Cat. No. | ND HP | Cat. No. |
|---|---|---|---|
| 480V AC | 20CD261 | 200 | 1321-RWR320-DP |
| | 20CD300 | 250 | 1321-RWR320-DP |

### PC Programming Software

| Description | |
|---|---|
| DriveTools™ SP Software (1) | See publication PFLEX-SG002 for further information. |
| DriveExplorer™ Software (Lite/Full) (1) (2) | |
| Pocket DriveExplorer™ Software | |

(1) Set-up wizards are available for use with DriveTools SP and DriveExplorer (Lite/Full) only.
(2) DriveExplorer Lite is available for free download at: http://www.ab.com/drives/driveexplorer/free_download.html.

### Output Reactors

For impedance matching and motor protection, reactors are available for the output sides of the drive.

### 480V, 60 Hz, Three-Phase, 3% Impedance

| | | | Output Line Reactor (1) | |
|---|---|---|---|---|
| | | | IP 00 (Open Style) | IP 11 (NEMA/UL Type 1) |
| Drive Catalog Number | Duty | HP | Catalog Number | Catalog Number |
| 20CD261 | Heavy Duty | 150 | 1321-3R200-B | 1321-3RA200-B |
| 20CD261 | Normal Duty | 200 | 1321-3RB250-B | 1321-3RAB250-B |
| 20CD300 | Heavy Duty | 200 | 1321-3RB250-B | 1321-3RAB250-B |
| 20CD300 | Normal Duty | 250 | 1321-3RB320-B | 1321-3RAB320-B |
| 20CD385 | Heavy Duty | 250 | 1321-3RB320-B | 1321-3RAB320-B |
| 20CD385 | Normal Duty | 300 | 1321-3RB400-B | 1321-3RAB400-B |
| 20CD460 | Heavy Duty | 300 | 1321-3RB400-B | 1321-3RAB400-B |
| 20CD460 | Normal Duty | 350 | 1321-3R500-B | 1321-3RA500-B |
| 20CD500 | Heavy Duty | 350 | 1321-3RB400-B | 1321-3RAB400-B |
| 20CD500 | Normal Duty | 450 | 1321-3R500-B | 1321-3RA500-B |
| 20CD590 | Heavy Duty | 450 | 1321-3R500-B | 1321-3RA500-B |
| 20CD590 | Normal Duty | 500 | 1321-3R600-B | 1321-3RA600-B |
| 20CD650 | Heavy Duty | 500 | 1321-3R600-B | 1321-3RA600-B |
| 20CD650 | Normal Duty | 500 | 1321-3R750-B | 1321-3RA750-B |
| 20CD730 | Heavy Duty | 500 | 1321-3R750-B | 1321-3RA750-B |
| 20CD730 | Normal Duty | 600 | 1321-3R750-B | 1321-3RA750-B |
| 20CD820 | Heavy Duty | 600 | 1321-3R750-B | 1321-3RA750-B |
| 20CD820 | Normal Duty | 700 | 1321-3RB400-B (2) | 1321-3RAB400-B (2) |
| 20CD920 | Heavy Duty | 700 | 1321-3RB400-B (2) | 1321-3RAB400-B (2) |
| 20CD920 | Normal Duty | 800 | 1321-3R500-B (2) | 1321-3RA500-B (2) |
| 20CD1K0 | Heavy Duty | 800 | 1321-3R500-B (2) | 1321-3RA500-B (2) |
| 20CD1K0 | Normal Duty | 900 | 1321-3R500-B (2) | 1321-3RA500-B (2) |
| 20CD1K1 | Heavy Duty | 900 | 1321-3R600-B (2) | 1321-3RA600-B (2) |
| 20CD1K1 | Normal Duty | 1000 | 1321-3R600-B (2) | 1321-3RA600-B (2) |
| 20CD1K3 | Heavy Duty | 1000 | 1321-3R750-B (2) | 1321-3RA750-B (2) |
| 20CD1K3 | Normal Duty | 1200 | 1321-3R750-B (2) | 1321-3RA750-B (2) |
| 20CD1K4 | Heavy Duty | 1000 | 1321-3R750-B (2) | 1321-3RA750-B (2) |
| 20CD1K4 | Normal Duty | 1250 | 1321-3R750-B (2) | 1321-3RA750-B (2) |

(1) PowerFlex 700H drives have integral input reactors. Output reactors were sized based on the VD rated output currents.

(2) Requires two output reactors wired in parallel.

### 480V, 60 Hz, Three-Phase, 5% Impedance

| Drive Catalog Number | Duty | HP | Output Line Reactor (1) | |
|---|---|---|---|---|
| | | | IP 00 (Open Style) | IP 11 (NEMA/UL Type 1) |
| | | | Catalog Number | Catalog Number |
| 20CD261 | Heavy Duty | 150 | 1321-3R200-C | 1321-3RA200-C |
| 20CD261 | Normal Duty | 200 | 1321-3RB250-C | 1321-3RAB250-C |
| 20CD300 | Heavy Duty | 200 | 1321-3RB250-C | 1321-3RAB250-C |
| 20CD300 | Normal Duty | 250 | 1321-3RB320-C | 1321-3RAB320-C |
| 20CD385 | Heavy Duty | 250 | 1321-3RB320-C | 1321-3RAB320-C |
| 20CD385 | Normal Duty | 300 | 1321-3RB400-C | 1321-3RAB400-C |
| 20CD460 | Heavy Duty | 300 | 1321-3RB400-C | 1321-3RAB400-C |
| 20CD460 | Normal Duty | 350 | 1321-3R500-C | 1321-3RA500-C |
| 20CD500 | Heavy Duty | 350 | 1321-3RB400-C | 1321-3RAB400-C |
| 20CD500 | Normal Duty | 450 | 1321-3R500-C | 1321-3RA500-C |
| 20CD590 | Heavy Duty | 450 | 1321-3R500-C | 1321-3RA500-C |
| 20CD590 | Normal Duty | 500 | 1321-3R600-C | 1321-3RA600-C |
| 20CD650 | Heavy Duty | 500 | 1321-3R600-C | 1321-3RA600-C |
| 20CD650 | Normal Duty | 500 | 1321-3R750-C (2) | 1321-3RA750-C (2) |
| 20CD730 | Heavy Duty | 500 | 1321-3R750-C (2) | 1321-3RA750-C (2) |
| 20CD730 | Normal Duty | 600 | 1321-3R750-C (2) | 1321-3RA750-C (2) |
| 20CD820 | Heavy Duty | 600 | 1321-3R750-C (2) | 1321-3RA750-C (2) |
| 20CD820 | Normal Duty | 700 | 1321-3RB400-C (3) | 1321-3RAB400-C (3) |
| 20CD920 | Heavy Duty | 700 | 1321-3RB400-C (3) | 1321-3RAB400-C (3) |
| 20CD920 | Normal Duty | 800 | 1321-3R500-C (3) | 1321-3RA500-C (3) |
| 20CD1K0 | Heavy Duty | 800 | 1321-3R500-C (3) | 1321-3RA500-C (3) |
| 20CD1K0 | Normal Duty | 900 | 1321-3R500-C (3) | 1321-3RA500-C (3) |
| 20CD1K1 | Heavy Duty | 900 | 1321-3R600-C (3) | 1321-3RA600-C (3) |
| 20CD1K1 | Normal Duty | 1000 | 1321-3R600-C (3) | 1321-3RA600-C (3) |
| 20CD1K3 | Heavy Duty | 1000 | 1321-3R750-C (2)(3) | 1321-3RA750-C (2)(3) |
| 20CD1K3 | Normal Duty | 1200 | 1321-3R750-C (2)(3) | 1321-3RA750-C (2)(3) |
| 20CD1K4 | Heavy Duty | 1000 | 1321-3R750-C (2)(3) | 1321-3RA750-C (2)(3) |
| 20CD1K4 | Normal Duty | 1250 | 1321-3R750-C (3) | 1321-3RA750-C (3) |

(1) PowerFlex 700H drives have integral input reactors. Output reactors were sized based on the VD rated output currents.

(2) 4% impedance.

(3) Requires two output reactors wired in parallel.

### 600V, 60 Hz, Three-Phase, 3% Impedance

| Drive Catalog Number | Duty | HP | Output Line Reactor (1) | |
|---|---|---|---|---|
| | | | IP 00 (Open Style) | IP 11 (NEMA/UL Type 1) |
| | | | Catalog Number | Catalog Number |
| 20CE170 | Heavy Duty | 150 | 1321-3R200-C | 1321-3RA200-C |
| 20CE170 | Normal Duty | 150 | 1321-3R200-C | 1321-3RA200-C |
| 20CE208 | Heavy Duty | 150 | 1321-3R200-C | 1321-3RA200-C |
| 20CE208 | Normal Duty | 200 | 1321-3R200-B | 1321-3RA200-B |
| 20CE261 | Heavy Duty | 200 | 1321-3R200-B | 1321-3RA200-B |
| 20CE261 | Normal Duty | 250 | 1321-3RB250-B | 1321-3RAB250-B |
| 20CE325 | Heavy Duty | 250 | 1321-3RB250-B | 1321-3RAB250-B |
| 20CE325 | Normal Duty | 350 | 1321-3RB320-B | 1321-3RAB320-B |
| 20CE385 | Heavy Duty | 350 | 1321-3RB320-B | 1321-3RAB320-B |
| 20CE385 | Normal Duty | 400 | 1321-3RB400-B | 1321-3RAB400-B |
| 20CE416 | Heavy Duty | 350 | 1321-3RB320-B | 1321-3RAB320-B |
| 20CE416 | Normal Duty | 450 | 1321-3RB400-B | 1321-3RAB400-B |
| 20CE460 | Heavy Duty | 400 | 1321-3RB400-B | 1321-3RAB400-B |
| 20CE460 | Normal Duty | 450 | 1321-3R500-B | 1321-3RA500-B |
| 20CE502 | Heavy Duty | 450 | 1321-3RB400-B | 1321-3RAB400-B |
| 20CE502 | Normal Duty | 500 | 1321-3R500-B | 1321-3RA500-B |

| Drive Catalog Number | Duty | HP | Output Line Reactor (1) | |
|---|---|---|---|---|
| | | | IP 00 (Open Style) | IP 11 (NEMA/UL Type 1) |
| | | | Catalog Number | Catalog Number |
| 20CE590 | Heavy Duty | 500 | 1321-3R500-B | 1321-3RA500-B |
| 20CE590 | Normal Duty | 600 | 1321-3R600-B | 1321-3RA600-B |
| 20CE650 | Heavy Duty | 650 | 1321-3RB320-B (2) | 1321-3RAB320-B (2) |
| 20CE650 | Normal Duty | 700 | 1321-3RB320-B (2) | 1321-3RAB320-B (2) |
| 20CE750 | Heavy Duty | 700 | 1321-3RB400-C (2) | 1321-3RAB400-C (2) |
| 20CE750 | Normal Duty | 800 | 1321-3RB400-C (2) | 1321-3RAB400-C (2) |
| 20CE820 | Heavy Duty | 700 | 1321-3RB400-B (2) | 1321-3RAB400-B (2) |
| 20CE820 | Normal Duty | 900 | 1321-3RB400-B (2) | 1321-3RAB400-B (2) |
| 20CE920 | Heavy Duty | 900 | 1321-3R1000-C | 1321-3RA1000-C |
| 20CE920 | Normal Duty | 1000 | 1321-3R1000-C | 1321-3RA1000-C |
| 20CE1K0 | Heavy Duty | 1000 | 1321-3R1000-B | 1321-3RA1000-B |
| 20CE1K0 | Normal Duty | 1100 | 1321-3R1000-B | 1321-3RA1000-B |
| 20CE1K1 | Heavy Duty | 1100 | 1321-3R600-B (2) | 1321-3RA600-B (2) |
| 20CE1K1 | Normal Duty | 1300 | 1321-3R600-B (2) | 1321-3RA600-B (2) |

(1) PowerFlex 700H drives have integral input reactors. Output reactors were sized based on the VD rated output currents.

(2) Requires two output reactors wired in parallel.

## 600V, 60 Hz, Three-Phase, 5% Impedance

| Drive Catalog Number | Duty | HP | Output Line Reactor (1) | |
|---|---|---|---|---|
| | | | IP 00 (Open Style) | IP 11 (NEMA/UL Type 1) |
| | | | Catalog Number | Catalog Number |
| 20CE170 | Heavy Duty | 150 | 1321-3R160-C (2) | 1321-3RA160-C (2) |
| 20CE170 | Normal Duty | 150 | 1321-3R200-C (3) | 1321-3RA200-C (3) |
| 20CE208 | Heavy Duty | 150 | 1321-3R200-C (3) | 1321-3RA200-C (3) |
| 20CE208 | Normal Duty | 200 | 1321-3R200-B (2) | 1321-3RA200-B (2) |
| 20CE261 | Heavy Duty | 200 | 1321-3R200-C (2) | 1321-3RA200-C (2) |
| 20CE261 | Normal Duty | 250 | 1321-3RB250-C (2) | 1321-3RAB250-C (2) |
| 20CE325 | Heavy Duty | 250 | 1321-3RB250-C (2) | 1321-3RAB250-C (2) |
| 20CE325 | Normal Duty | 350 | 1321-3RB320-C (2) | 1321-3RAB320-C (2) |
| 20CE385 | Heavy Duty | 350 | 1321-3RB320-C (2) | 1321-3RAB320-C (2) |
| 20CE385 | Normal Duty | 400 | 1321-3RB400-C (2) | 1321-3RAB400-C (2) |
| 20CE416 | Heavy Duty | 350 | 1321-3RB320-C (2) | 1321-3RAB320-C (2) |
| 20CE416 | Normal Duty | 450 | 1321-3RB400-C | 1321-3RAB400-C |
| 20CE460 | Heavy Duty | 400 | 1321-3RB400-C (2) | 1321-3RAB400-C (2) |
| 20CE460 | Normal Duty | 450 | 1321-3R500-C (2) | 1321-3RA500-C (2) |
| 20CE502 | Heavy Duty | 450 | 1321-3RB400-C | 1321-3RAB400-C |
| 20CE502 | Normal Duty | 500 | 1321-3R500-C | 1321-3RA500-C (2) |
| 20CE590 | Heavy Duty | 500 | 1321-3R500-C | 1321-3RA500-C |
| 20CE590 | Normal Duty | 600 | 1321-3R600-C (2) | 1321-3RA600-C (2) |
| 20CE650 | Heavy Duty | 650 | 1321-3RB320-C (2)(4) | 1321-3RAB320-C (2)(4) |
| 20CE650 | Normal Duty | 700 | 1321-3RB320-C (2)(4) | 1321-3RAB320-C (2)(4) |
| 20CE750 | Heavy Duty | 700 | 1321-3RB400-C (2)(4) | 1321-3RAB400-C (2)(4) |
| 20CE750 | Normal Duty | 800 | 1321-3RB400-C (2)(4) | 1321-3RAB400-C (2)(4) |
| 20CE820 | Heavy Duty | 700 | 1321-3RB400-C (2)(4) | 1321-3RAB400-C (2)(4) |
| 20CE820 | Normal Duty | 900 | 1321-3RB400-C (4) | 1321-3RAB400-C (4) |
| 20CE920 | Heavy Duty | 900 | 1321-3R500-C (2)(4) | 1321-3RA500-C (2)(4) |
| 20CE920 | Normal Duty | 1000 | 1321-3R500-C (2)(4) | 1321-3RA500-C (2)(4) |
| 20CE1K0 | Heavy Duty | 1000 | 1321-3R1000-C (2) | 1321-3RA1000-C (2) |
| 20CE1K0 | Normal Duty | 1100 | 1321-3R1000-C (2) | 1321-3RA1000-C (2) |
| 20CE1K1 | Heavy Duty | 1100 | 1321-3R600-C (2)(4) | 1321-3RA600-C (2)(4) |
| 20CE1K1 | Normal Duty | 1300 | 1321-3R600-C (2)(4) | 1321-3RA600-C (2)(4) |

(1) PowerFlex 700H drives have integral input reactors. Output reactors were sized based on the VD rated output currents.

(2) 4% impedance.

(3) 3% impedance.

(4) Requires two output reactors wired in parallel.

690V, 60 Hz, Three-Phase, 3% Impedance

| Drive Catalog Number | Duty | HP | Output Line Reactor (1) | |
|---|---|---|---|---|
| | | | IP 00 (Open Style) | IP 11 (NEMA/UL Type 1) |
| | | | Catalog Number | Catalog Number |
| 20CF170 | Heavy Duty | 132 | 1321-3RB250-C | 1321-3RAB250-C |
| 20CF170 | Normal Duty | 160 | 1321-3RB250-C | 1321-3RAB250-C |
| 20CF208 | Heavy Duty | 160 | 1321-3RB250-C | 1321-3RAB250-C |
| 20CF208 | Normal Duty | 200 | 1321-3RB250-C | 1321-3RAB250-C |
| 20CF261 | Heavy Duty | 200 | 1321-3RB320-C | 1321-3RAB320-C |
| 20CF261 | Normal Duty | 250 | 1321-3RB320-C | 1321-3RAB320-C |
| 20CF325 | Heavy Duty | 250 | 1321-3RB400-C | 1321-3RAB400-C |
| 20CF325 | Normal Duty | 315 | 1321-3RB400-C | 1321-3RAB400-C |
| 20CF385 | Heavy Duty | 315 | 1321-3R500-C | 1321-3RA500-C |
| 20CF385 | Normal Duty | 355 | 1321-3R500-C | 1321-3RA500-C |
| 20CF416 | Heavy Duty | 315 | 1321-3R500-C | 1321-3RA500-C |
| 20CF416 | Normal Duty | 400 | 1321-3R500-C | 1321-3RA500-C |
| 20CF460 | Heavy Duty | 355 | 1321-3R600-C | 1321-3RA600-C |
| 20CF460 | Normal Duty | 450 | 1321-3R600-C | 1321-3RA600-C |
| 20CF502 | Heavy Duty | 450 | 1321-3R600-C | 1321-3RA600-C |
| 20CF502 | Normal Duty | 500 | 1321-3R600-C | 1321-3RA600-C |
| 20CF590 | Heavy Duty | 500 | 1321-3R750-C | 1321-3RA750-C |
| 20CF590 | Normal Duty | 560 | 1321-3R750-C | 1321-3RA750-C |
| 20CF650 | Heavy Duty | 560 | 1321-3RB400-C (2) | 1321-3RAB400-C (2) |
| 20CF650 | Normal Duty | 630 | 1321-3RB400-C (2) | 1321-3RAB400-C (2) |
| 20CF750 | Heavy Duty | 630 | 1321-3R500-C (2) | 1321-3RA500-C (2) |
| 20CF750 | Normal Duty | 710 | 1321-3R500-C (2) | 1321-3RA500-C (2) |
| 20CF820 | Heavy Duty | 630 | 1321-3R500-C (2) | 1321-3RA500-C (2) |
| 20CF820 | Normal Duty | 800 | 1321-3R500-C (2) | 1321-3RA500-C (2) |
| 20CF920 | Heavy Duty | 800 | 1321-3R600-C (2) | 1321-3RA600-C (2) |
| 20CF920 | Normal Duty | 900 | 1321-3R600-C (2) | 1321-3RA600-C (2) |
| 20CF1K0 | Heavy Duty | 900 | 1321-3R600-C (2) | 1321-3RA600-C (2) |
| 20CF1K0 | Normal Duty | 1000 | 1321-3R600-C (2) | 1321-3RA600-C (2) |
| 20CF1K1 | Heavy Duty | 1000 | 1321-3R750-C (2) | 1321-3RA750-C (2) |
| 20CF1K1 | Normal Duty | 1100 | 1321-3R750-C (2) | 1321-3RA750-C (2) |

(1) PowerFlex 700H drives have integral input reactors. Output reactors were sized based on the VD rated output currents.

(2) Requires two output reactors wired in parallel.

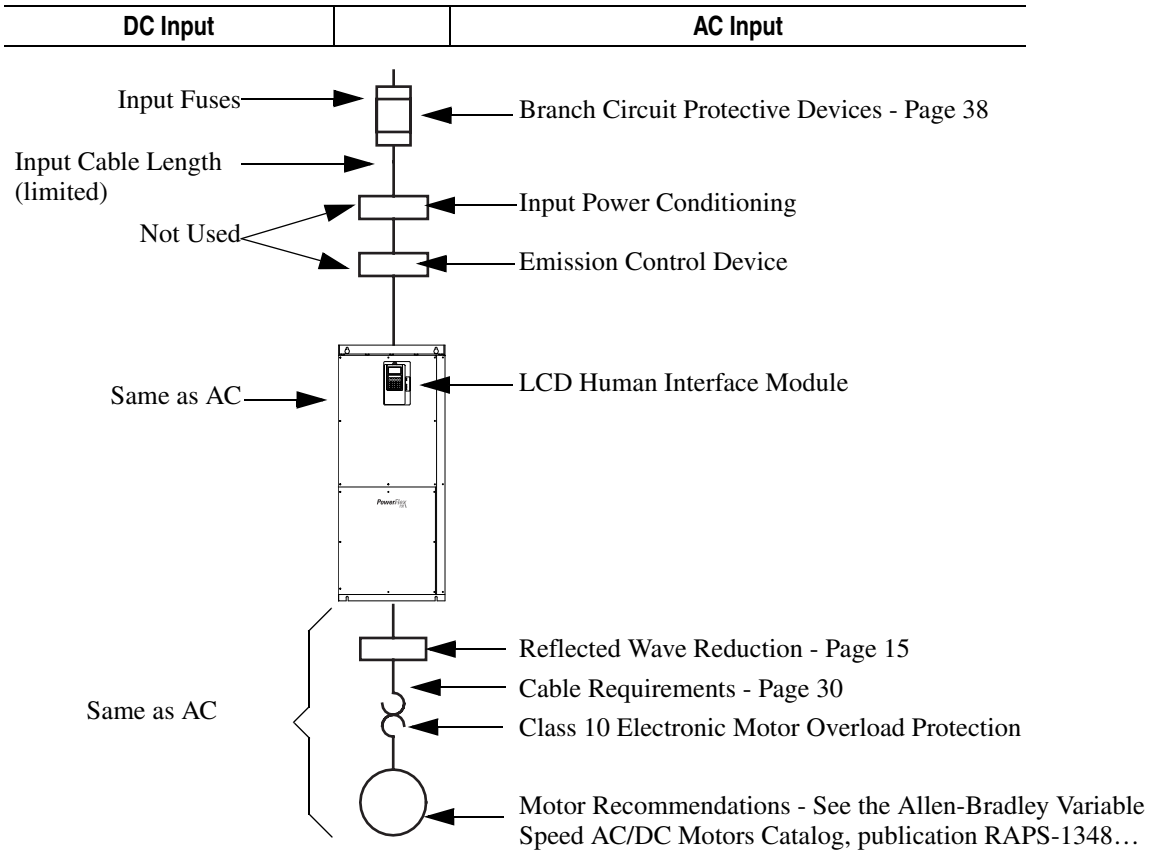
## *Installation Considerations*

### Power Wiring

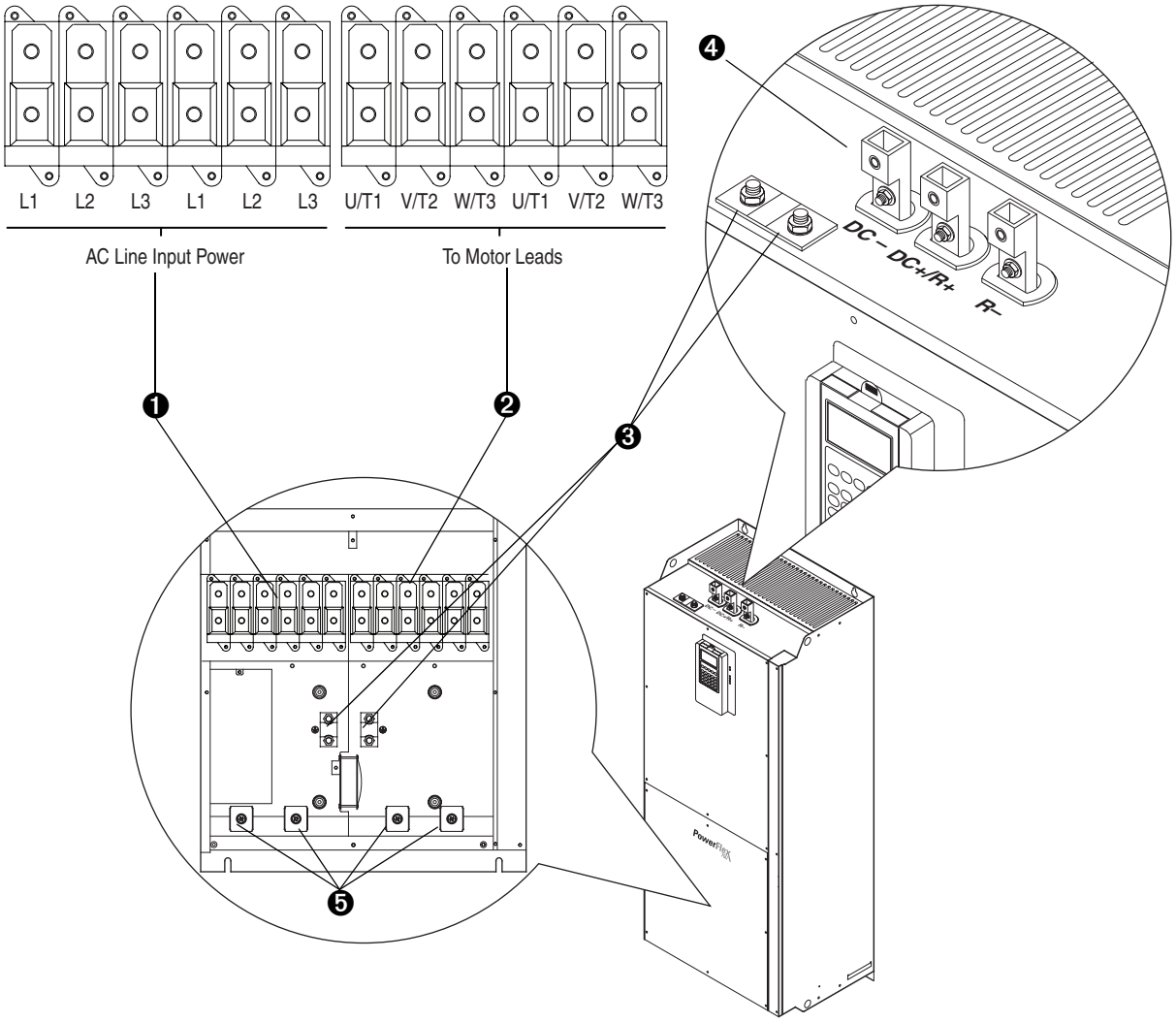
The PowerFlex 700H has the following built in protective features to help simplify installation:

- Ground fault protection during start up and running ensures reliable operation
- Electronic motor overload protection increases motor life
- To ensure compatibility with ungrounded systems, Frame 10 - 14 drives incorporate removable MOV to ground and common mode capacitors to ground. Frame 9 drives can be specially ordered to allow compatibility with ungrounded systems.
- 6 kV transient protection provides increased robustness for 380-480V system voltages

There are many other factors that must be considered for optimal performance in any given application. The block diagram below highlights the primary installation considerations.


DC Input
AC Input
Input Fuses
Branch Circuit Protective Devices - Page 38
Input Cable Length (limited)
Input Power Conditioning
Not Used
Emission Control Device
Same as AC
LCD Human Interface Module
Reflected Wave Reduction - Page 15
Cable Requirements - Page 30
Same as AC
Class 10 Electronic Motor Overload Protection
Motor Recommendations - See the Allen-Bradley Variable Speed AC/DC Motors Catalog, publication RAPS-1348…

Power Terminal Block Specifications, Frame 9



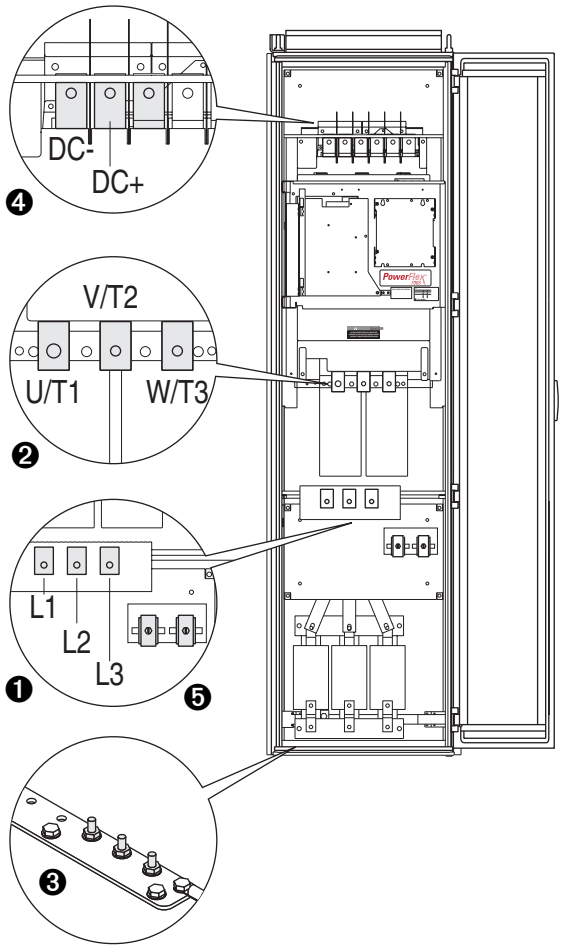

| No. | Name | Description | Wire Size Range (1) | | Torque |
|---|---|---|---|---|---|
| | | | Maximum | Minimum | Recommended |
| ❶ | Input Power Terminal Block(2)<br>L1, L2, L3 | Input power | 185.0 mm$^2$<br>(350 MCM) | 95.0 mm$^2$<br>(4/0 AWG) | 40 N•m<br>(354 lb•in) |
| ❷ | Output Power Terminal Block(2)<br>U/T1, V/T2, W/T3 | Motor connections | 185.0 mm$^2$<br>(350 MCM) | 95.0 mm$^2$<br>(4/0 AWG) | 40 N•m<br>(354 lb•in) |
| ❸ | SHLD Terminal, PE, Motor Ground | Terminating point for wiring shields | 95.0 mm$^2$<br>(4/0 AWG) | 5.0 mm2<br>(10 AWG) | 22 N•m<br>(195 lb•in) |
| ❹ | DC Bus(3)<br>(2 Terminals; DC–, DC+) | DC input or external brake resistor<br>*(Internal Brake option not ordered)* | 185.0 mm$^2$<br>(350 MCM) | 95.0 mm$^2$<br>(4/0 AWG) | 40 N•m<br>(354 lb•in) |
| | DC Bus w/Brake(3)<br>(3 Terminals; DC–, DC+/R+, R–) | DC input/internal brake<br>*(Internal Brake option is ordered)* | 185.0 mm$^2$<br>(350 MCM) | 95.0 mm$^2$<br>(4/0 AWG) | 40 N•m<br>(354 lb•in) |
| ❺ | Cable Clamp for Shield | | | | |

(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations.

(2) Do Not exceed maximum wire size. Parallel connections may be required.

(3) DC terminal and brake lugs can be removed.

Power Terminal Block Specifications, Frame 10




| No. | Name | Description | Wire Size Range (1)(2) | | Torque | Terminal Bolt Size (3)(4) |
|---|---|---|---|---|---|---|
| | | | Maximum | Minimum | Recommended | |
| 1 | Input Power Terminal Block (3)<br>L1, L2, L3 | Input power | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M12 |
| 2 | Output Power Terminal Block (3)<br>U/T1, V/T2, W/T3 | Motor connections | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M12 |
| 3 | SHLD Terminal, PE, Motor Ground (3) | Terminating point for wiring shields | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M10 |
| 4 | DC Bus (3)<br>(2 Terminals; DC–, DC+) | DC input or external brake | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M12 |
| 5 | Cable Clamp for Shield | | | | | |

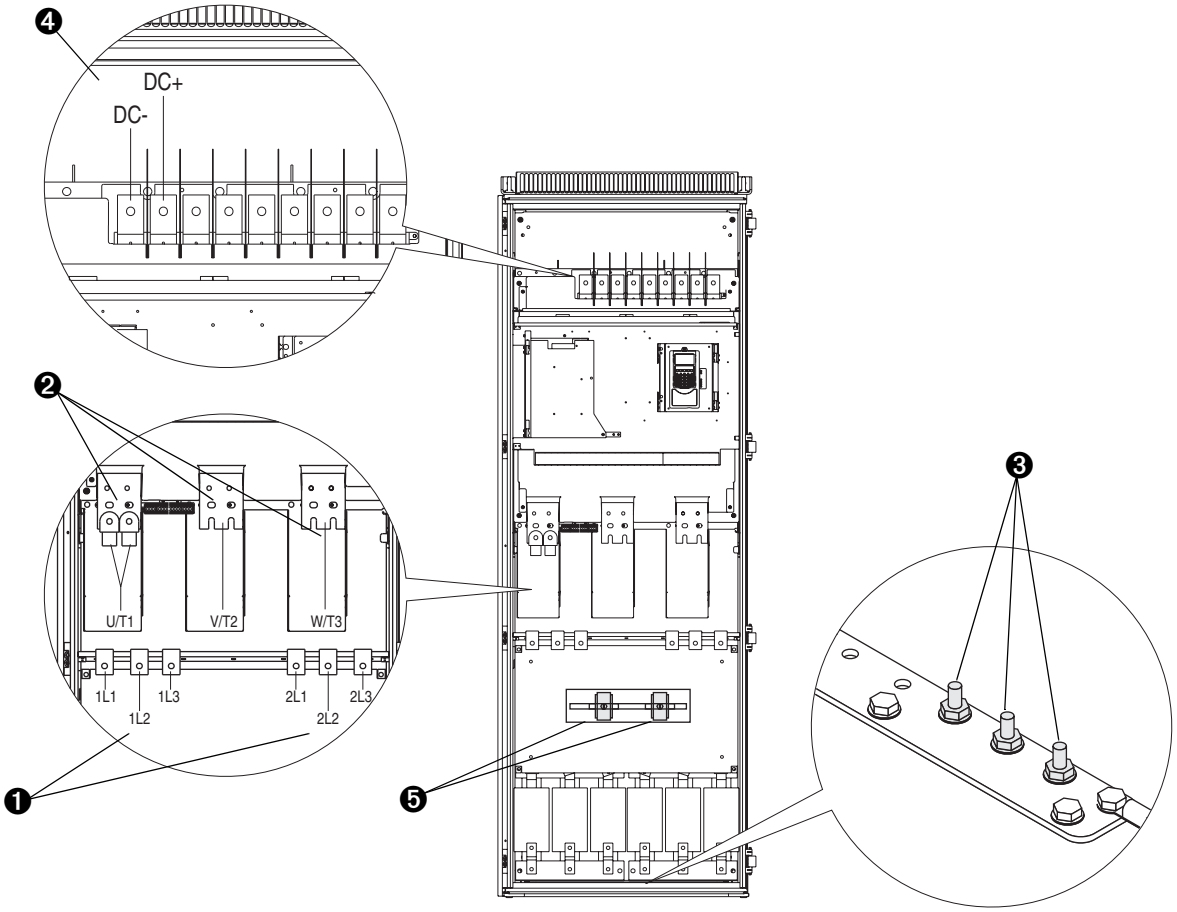
(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations.

(2) Do Not exceed maximum wire size. Parallel connections may be required.

(3) These connections are bus bar type terminations and require the use of lug type connectors.

(4) Apply counter torque to the nut on the other side of terminations when tightening or loosening the terminal bolt in order to avoid damage to the terminal.

Power Terminal Specifications, Frame 11




| No. | Name | Description | Wire Size Range (1)(2) | | Torque | Terminal Bolt Size (3)(4) |
|---|---|---|---|---|---|---|
| | | | Maximum | Minimum | Recommended | |
| ❶ | Input Power Terminal Block (3)<br>1L1, 1L2, 1L3, 2L1, 2L2, 2L3 | AC Input power | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M12 |
| ❷ | Output Power Terminal Block (3)<br>U/T1, V/T2, W/T3 | Motor connections | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M12 |
| ❸ | SHLD Terminal, PE, Motor Ground (3) | Terminating point for wiring shields | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M10 |
| ❹ | DC Bus (3)<br>(2 Terminals; DC–, DC+) | DC input or external brake | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M12 |
| ❺ | Cable Clamp for Shield | | | | | |

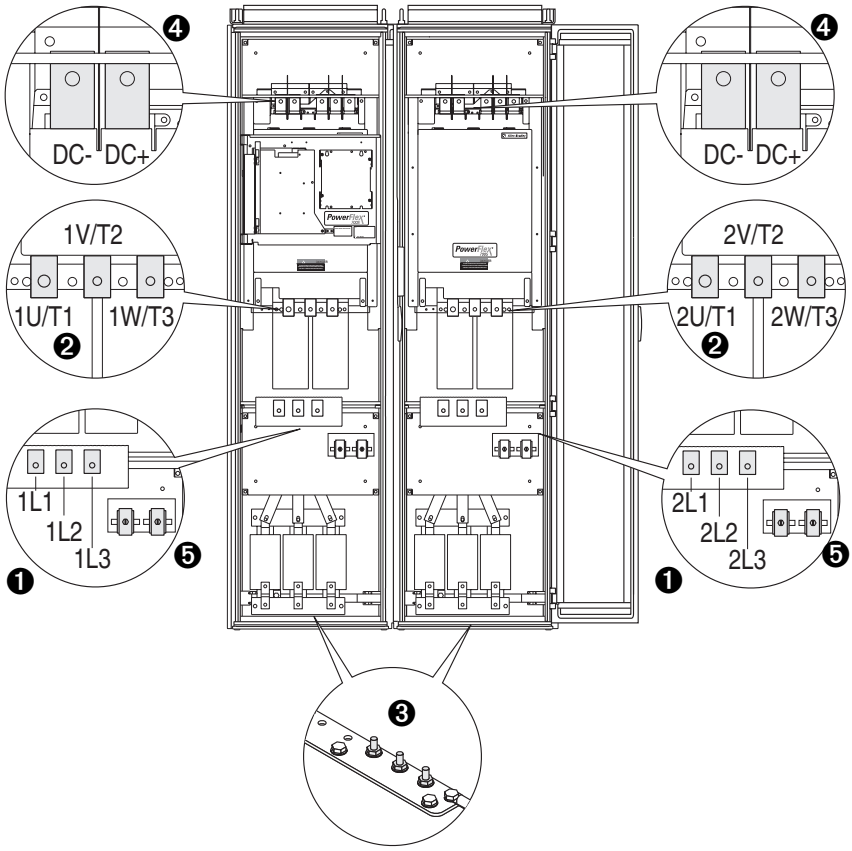
(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations.

(2) Do Not exceed maximum wire size. Parallel connections may be required.

(3) These connections are bus bar type terminations and require the use of lug type connectors.

(4) Apply counter torque to the nut on the other side of terminations when tightening or loosening the terminal bolt in order to avoid damage to the terminal.

Power Terminal Specifications, Frame 12




| No. | Name | Description | Wire Size Range (1)(2) | | Torque | Terminal Bolt Size (3)(4) |
|---|---|---|---|---|---|---|
| | | | Maximum | Minimum | Recommended | |
| ❶ | Input Power Terminal Block (3)<br>1L1, 1L2, 1L3, 2L1, 2L2, 2L3 | Input power | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in | M12 |
| ❷ | Output Power Terminal Block (3)<br>1U/1T1, 1V/1T2, 1W/1T3,<br>2U/2T1, 2V/2T2, 2W/2T3 | Motor connections | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M12 |
| ❸ | SHLD Terminal, PE, Motor Ground (3) | Terminating point for wiring shields | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M10 |
| ❹ | DC Bus (3)<br>(2 Terminals; DC–, DC+) | DC input or external brake | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M12 |
| ❺ | Cable Clamp for Shield | | | | | |

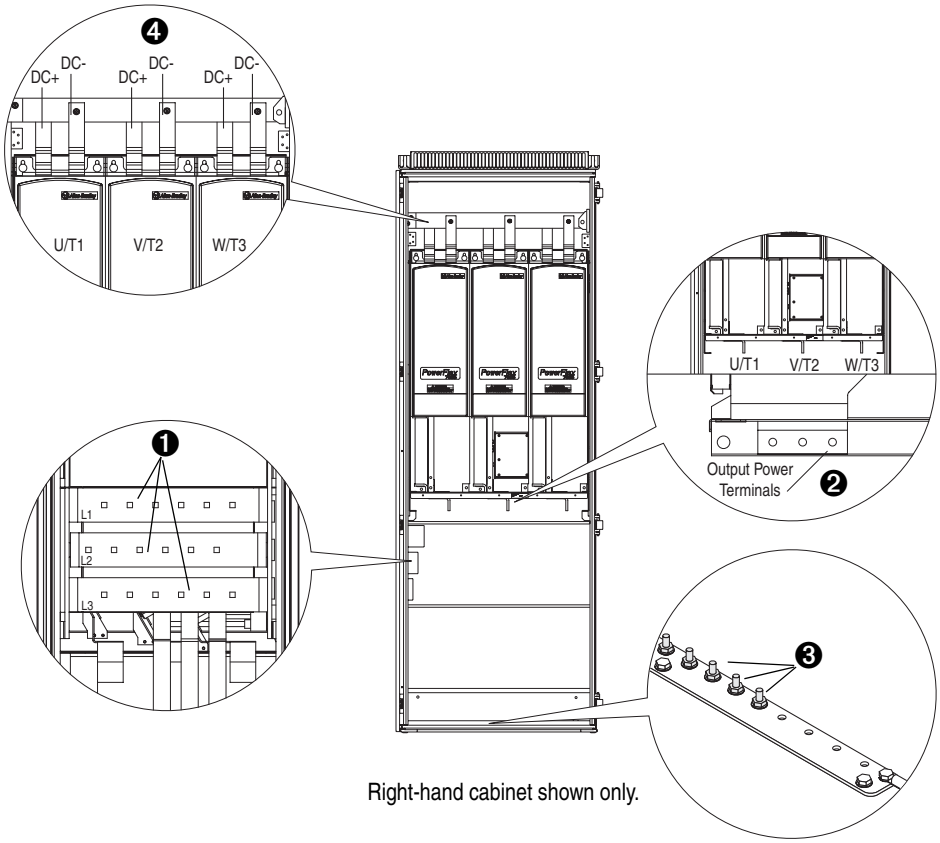
(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations.

(2) Do Not exceed maximum wire size. Parallel connections may be required.

(3) These connections are bus bar type terminations and require the use of lug type connectors.

(4) Apply counter torque to the nut on the other side of terminations when tightening or loosening the terminal bolt in order to avoid damage to the terminal.

Power Terminal Specifications, Frame 13




Right-hand cabinet shown only.

| No. | Name | Description | Wire Size Range (1)(2) | | Torque | Terminal Bolt Size (3)(4) |
|---|---|---|---|---|---|---|
| | | | Maximum | Minimum | Recommended | |
| ❶ | Input Power Terminal Block (1)<br>L1, L2, L3 | Input power | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M12 |
| ❷ | Output Power Terminal Block (3)<br>U/T1, V/T2, W/T3 | Motor connections | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M12 |
| ❸ | SHLD Terminal, PE, Motor Ground (3) | Terminating point for wiring shields | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M10 |
| ❹ | DC Bus (3)<br>(3 Terminals; DC–, DC+) | DC input or external brake | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M12 |

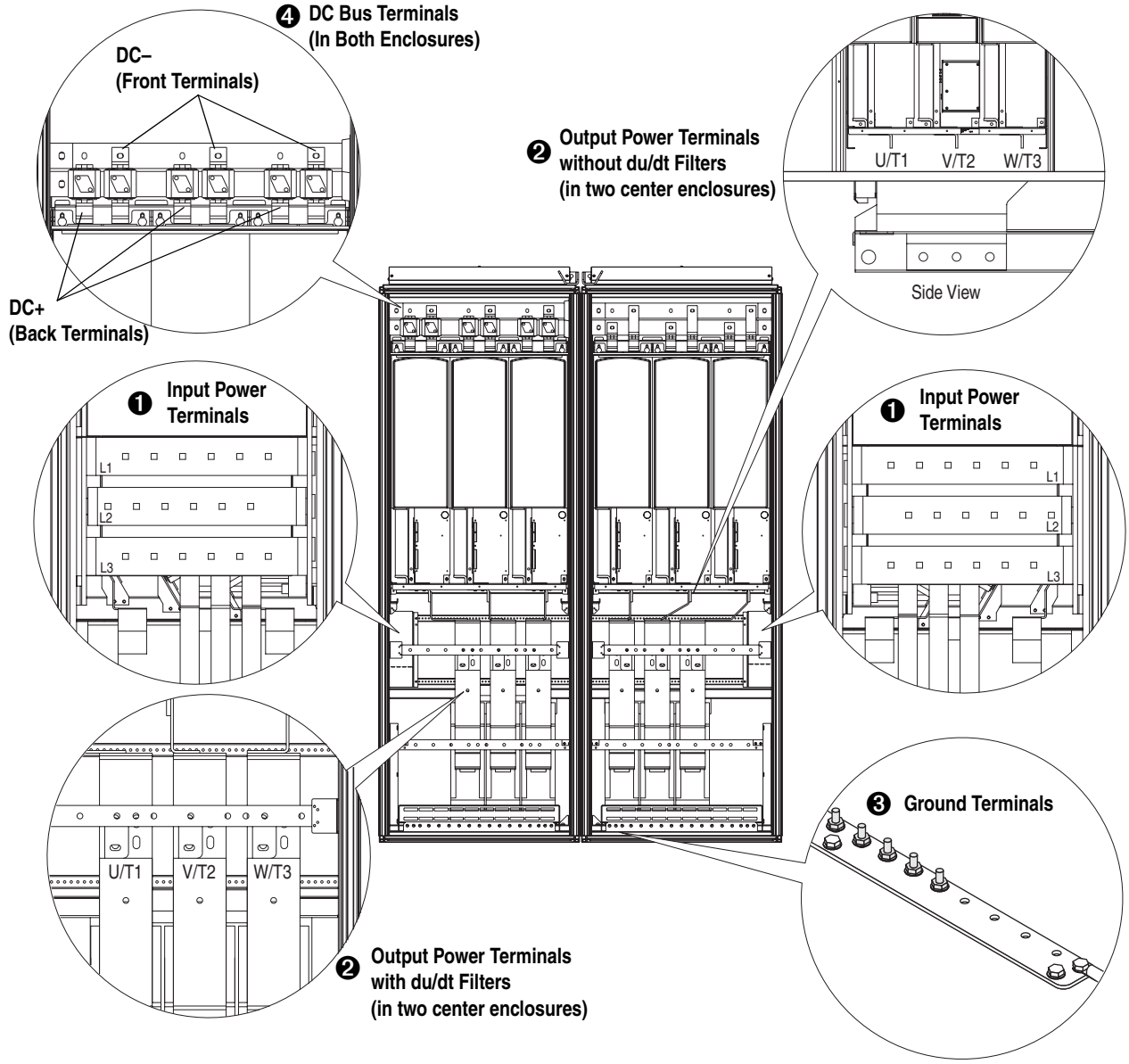
(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations.

(2) Do Not exceed maximum wire size. Parallel connections may be required.

(3) These connections are bus bar type terminations and require the use of lug type connectors.

(4) Apply counter torque to the nut on the other side of terminations when tightening or loosening the terminal bolt in order to avoid damage to the terminal.

Power Terminal Specifications, Frame 14 (Example of Drive Above 1500A Shown)




| No. | Name | Description | Wire Size Range (1)(2) | | Torque | Terminal Bolt Size (3)(4) |
|---|---|---|---|---|---|---|
| | | | Maximum | Minimum | Recommended | |
| 1 | Input Power Terminal Block (1)<br>L1, L2, L3 | Input power | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M12 |
| 2 | Output Power Terminal Block (3)<br>U/T1, V/T2, W/T3 | Motor connections | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M12 |
| 3 | SHLD Terminal, PE, Motor Ground (3) | Terminating point for wiring shields | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M10 |
| 4 | DC Bus (3)<br>(3 Terminals; DC–, DC+) | DC input or external brake | 300 mm² (600 MCM) | 2.1 mm² (14 AWG) | 40 N•m (354 lb•in) | M12 |

(1) Maximum/minimum sizes that the terminal block will accept - these are not recommendations.

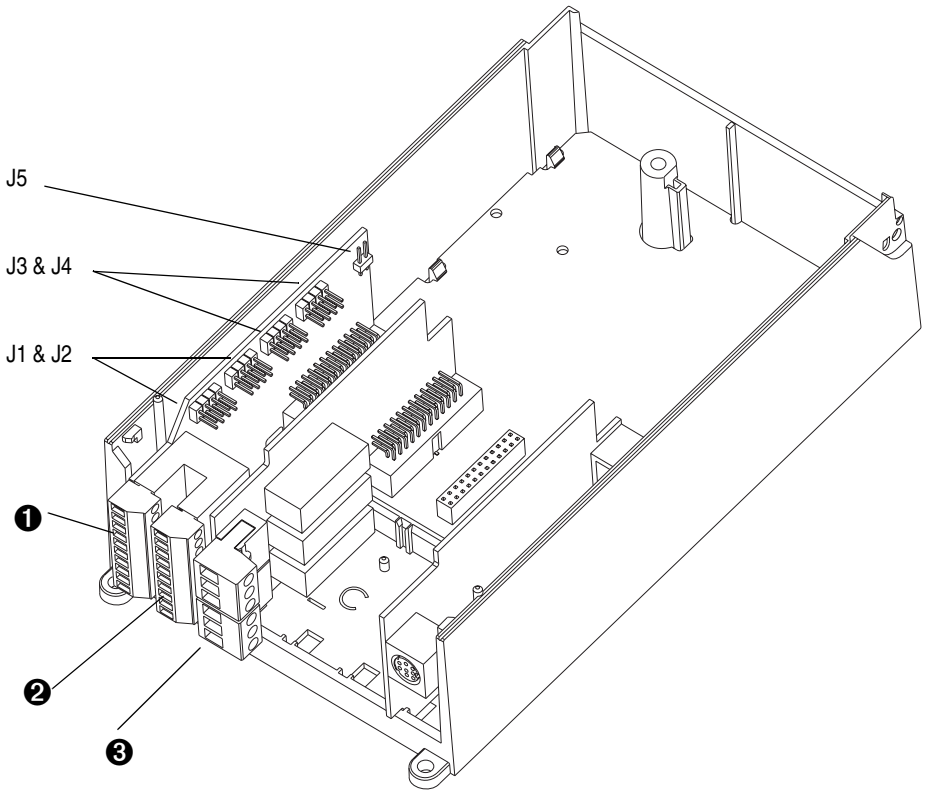
(2) Do Not exceed maximum wire size. Parallel connections may be required.

(3) These connections are bus bar type terminations and require the use of lug type connectors.

(4) Apply counter torque to the nut on the other side of terminations when tightening or loosening the terminal bolt in order to avoid damage to the terminal.

## Control Terminals

I/O Terminal Blocks & Jumpers

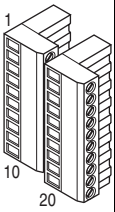
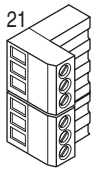



I/O Terminal Block Specifications

| No. | Name | Description | Wire Size Range (1) | | Torque | |
|---|---|---|---|---|---|---|
| | | | Maximum | Minimum | Maximum | Recommended |
| 1 | Analog I/O | Analog I/O Signals | 2.5 $mm^2$ (14 AWG) | 0.5 $mm^2$ (22 AWG) | 0.2 N-m 1.8 lb.-in. | 0.2 N•m 1.8 lb•in |
| 2 | Digital Inputs | Digital Input Signals | 2.5 $mm^2$ (14 AWG) | 0.5 $mm^2$ (22 AWG) | 0.2 N-m 1.8 lb.-in. | 0.2 N•m 1.8 lb•in |
| 3 | Digital Outputs | Digital Out Relays | 2.5 $mm^2$ (14 AWG) | 0.5 $mm^2$ (22 AWG) | 0.5 N-m 4.5 lb.-in. | 0.5 N•m 4.5 lb•in |

(1) Maximum/Minimum sizes that the terminal block will accept - these are not recommendations.

## I/O Terminal Designations

| | No. | Signal | Factory Default | Description | Related Parameter(s) |
|---|---|---|---|---|---|
|   | 1 | Analog In 1 (–) (1) | (4) | Isolated (5), bipolar, differential, 9 bit & sign, 88k ohm input impedance. A jumper (page 28) selects: 0-10V, ±10V, 4-20mA. Default: 0-10V (Ri =200k), 4-20mA (Ri=100 ohm). | 320 - 327 |
| | 2 | Analog In 1 (+) (1) | | | |
| | 3 | Analog In 2 (–) (1) | | | |
| | 4 | Analog In 2 (+) (1) | | | |
| | 5 | –10V Pot Reference | – | 2k ohm minimum, 10 mA maximum load, 1% accuracy. | |
| | 6 | Pot Common (GND) | | For (+) and (–) 10V pot references. | |
| | 7 | +10V Pot Reference | – | 2k ohm minimum, 10mA maximum load, 1% accuracy. | |
| | 8 | Analog Out 1 (+) | (4) | Bipolar (current out is not bipolar), 9 bit & sign, 2k ohm minimum load. A jumper (see page 28) selects: 0-10V, ±10V, 4-20mA. | 340 - 347 |
| | 9 | Analog Out Common | | | |
| | 10 | Analog Out 2 (+) | | | |
| | 11 | Digital In 1 | Stop - CF | 115V AC, 50/60 Hz - Opto isolated<br>Low State: less than 30V AC<br>High State: greater than 40V AC<br>24V DC - Opto isolated (250V)<br>Low State: less than 5V DC<br>High State: greater than 20V DC<br>11.2 mA DC<br>Enable: Digital Input 6 is jumper selectable for HW Enable.<br>On-Time: < 16.7ms, Off-Time < 1ms | 361 - 366 |
| | 12 | Digital In 2 | Start | | |
| | 13 | Digital In 3 | Auto/Man | | |
| | 14 | Digital In 4 | Speed Sel 1 | | |
| | 15 | Digital In 5 | Speed Sel 2 | | |
| | 16 | Digital In 6/Hardware Enable, see pg. 29 | Speed Sel 3 | | |
| | 17<br>18 | Digital In Common | | Allows source or sink operation. Terminals 17/18 & 19 can also be used to provide backup power to DPI and control devices. | |
| | 19 | +24VDC (2) | – | Drive supplied logic input power. | |
| | 20 | 24V Common (2) | – | Common for internal power supply. | |
|   | 21 | Digital Out 1 – N.C. (3) | Fault | Max. Resistive Load:<br>240V AC/30V DC – 1200VA, 150W<br>Max. Current: 5A, Min. Load: 10mA<br>Max. Inductive Load:<br>240V AC/30V DC – 840VA, 105W<br>Max. Current: 3.5A, Min. Load: 10mA | 380 - 391 |
| | 22 | Digital Out 1 Common | | | |
| | 23 | Digital Out 1 – N.O. (3) | NOT Fault | | |
| | 24 | Digital Out 2 – N.C. (3) | NOT Run | | |
| | 25 | Digital Out 2/3 Com. | | | |
| | 26 | Digital Out 3 – N.O. (3) | Run | | |

(1) Important: Input must be configured with a jumper. Drive damage may occur if jumper is not installed properly. Refer to page 28.

(2) 150mA maximum Load. Not present on 115V versions. Can be used to provide control power from an external 24V source when main power is not applied. Refer to page 29.

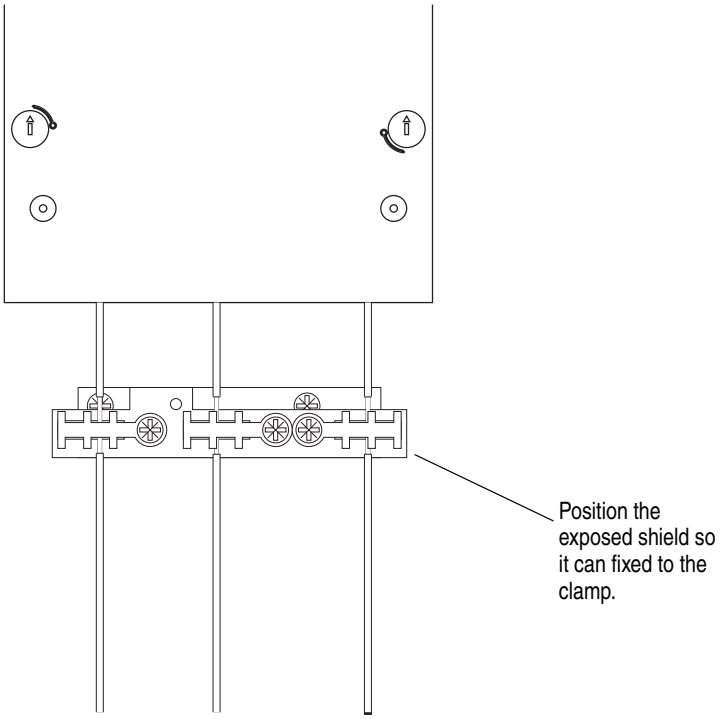
(3) Contacts in unpowered state. Any relay programmed as Fault or Alarm will energize (pick up) when power is applied to drive and de-energize (drop out) when a fault or alarm exists. Relays selected for other functions will energize only when that condition exists and will deenergize when condition is removed.

(4) These inputs/outputs are dependant on a number of parameters (see “Related Parameters”).

(5) Differential Isolation - External source must be maintained at less than 160V with respect to PE. Input provides high common mode immunity.

### I/O Cable Grounding

When installing/stripping shielded multi-conductor cable for analog and digital I/O, allow sufficient distance from the terminal plug to permit attachment to the cable clamp for grounding.

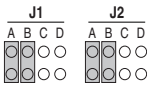
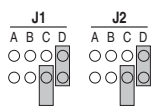
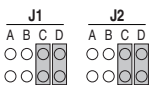
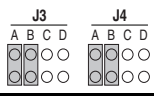
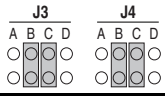
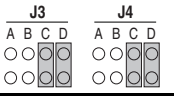



**Note**: This clamp is not designed for strain relief.

### Analog I/O Configuration

**Important:** Analog I/O must be configured through programming, as well as the jumpers shown below. Refer to publication 20C-PM001…, *PowerFlex 700H Adjustable Frequency AC Drive - Programming Manual*.

### I/O Configuration

| Signal | Jumper | Setting | | |
|---|---|---|---|---|
| Analog Inputs | J1 (Analog In 1)<br>J2 (Analog In 2) | 0-20 mA | 0-10V | ±10V |
| | |  |  |  |
| Analog Outputs | J3 (Analog Out 1)<br>J4 (Analog Out 2) | 0-20 mA | 0-10V | ±10V |
| | |  |  |  |

## Hardware Enable Circuitry

By default, the user can program a digital input as an Enable input. The status of this input is *interpreted by drive software*. If the application requires the drive to be disabled *without* software interpretation, a "dedicated" hardware enable configuration can be utilized. This is done by removing jumper J5 and wiring the enable input to "Digital In 6" (see below). Verify that [Digital In6 Sel], parameter 366 is set to "1, Enable."

Hardware Enable Configuration

| Signal | Jumper | Setting | |
|---|---|---|---|
| Hardware Enable | J5 | Hardware Enable | Input Programmable (No Hardware Enable) |
| | | J5<br>A B<br>○ ○ | J5<br>A B<br>○ ○ |

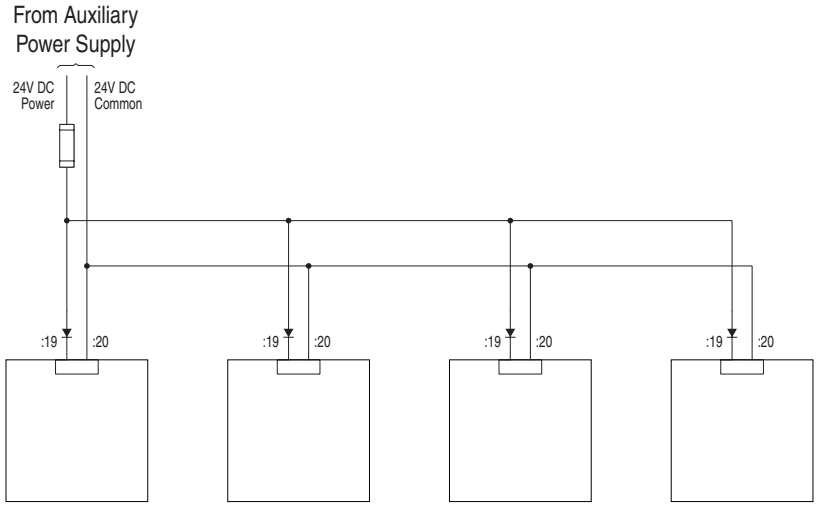
## Auxiliary Power Supply

You may use an auxiliary power supply to keep the PowerFlex 700H Control Unit energized, when input power is deenergized. This provides back-up power for the Control Unit and is sufficient for setting parameters. Connect 24V DC power to pin 19 and 24V DC common to pin 20 of the 24V DC version of the I/O card.

Auxiliary Power Supply Specifications

| Voltage | Current (Min) | Current (Max) |
|---|---|---|
| 24V DC ± 15% | 150 mA | 250 mA |

If 24V terminals of several drives are connected in parallel, we recommend using a diode circuit to block current flow in the opposite direction. Reverse current flow could damage the Control Board.



## *Cable Recommendations*

Important points to remember about I/O wiring:

- Always use copper wire.
- Wire with an insulation rating of 600V or greater is recommended.
- Control and signal wires should be separated from power wires by at least 0.3 meters (1 foot).

**Important:** I/O terminals labeled "(–)" or "Common" are not referenced to earth ground and are designed to greatly reduce common mode interference. Grounding these terminals can cause signal noise.

### Signal and Control Wire Types

Recommended Signal Wire

| Signal Type | Wire Type(s) | Description | Minimum Insulation Rating |
|---|---|---|---|
| Analog I/O | Belden 8760/9460 (or equiv.) | 0.750 mm² (18 AWG), twisted pair, 100% shield with drain. ❶ | 300V, 75-90 degrees C (167-194 degrees F) |
| | Belden 8770 (or equiv.) | 0.750 mm² (18 AWG), 3 cond., shielded for remote pot only. | |
| EMC Compliance | Refer to Installation Manual for details. | | |

❶ If the wires are short and contained within a cabinet which has no sensitive circuits, the use of shielded wire may not be necessary, but is always recommended.

Recommended Control Wire for Digital I/O

| Type | Wire Type(s) | Description | Minimum Insulation Rating |
|---|---|---|---|
| Unshielded | Per US NEC or applicable national or local code | – | 300V, 60 degrees C (140 degrees F) |
| Shielded | Multi-conductor shielded cable such as Belden 8770 (or equiv.) | 0.750 mm² (18 AWG), 3 conductor, shielded. | |

### Cable Types Acceptable for 200-600 Volt Installations

A variety of cable types are acceptable for drive installations. For many installations, unshielded cable is adequate, provided it can be separated from sensitive circuits. As an approximate guide, allow a spacing of 0.3 meters (1 foot) for every 10 meters (32.8 feet) of length. In all cases, long parallel runs must be avoided. Do not use cable with an insulation thickness less than or equal to 15 mils (0.4 mm/0.015 in.). Use Copper wire only. Wire gauge requirements and recommendations are based on 75 degrees C. Do not reduce wire gauge when using higher temperature wire.

#### Unshielded Cable

THHN, THWN or similar wire is acceptable for drive installation in dry environments provided adequate free air space and/or conduit fill rates limits are provided. **Do not use THHN or similarly coated wire in wet areas**. Any wire chosen must have a minimum insulation thickness of 15 mils (0.4 mm/0.015 in.) and should not have large variations in insulation concentricity.

#### Shielded Cable

Shielded cable contains all of the general benefits of multi-conductor cable with the added benefit of a copper braided shield that can contain much of the noise generated by a typical AC drive. Strong consideration for shielded cable should be given in installations with sensitive equipment such as weigh scales, capacitive proximity switches and other devices that may be affected by electrical noise in the distribution system. Applications with large numbers of drives in a similar location, imposed EMC regulations or a high degree of communications/ networking are also good candidates for shielded cable.

Shielded cable may also help reduce shaft voltage and induced bearing currents for some applications. In addition, the increased impedance of shielded cable may help extend the distance that the motor can be located from the drive without

the addition of motor protective devices such as terminator networks. Refer to *Reflected Wave* in "Wiring and Grounding Guidelines for PWM AC Drives," publication DRIVES-IN001A-EN-P.

Consideration should be given to all of the general specifications dictated by the environment of the installation, including temperature, flexibility, moisture characteristics and chemical resistance. In addition, a braided shield should be included and be specified by the cable manufacturer as having coverage of at least 75%. An additional foil shield can greatly improve noise containment.

A good example of recommended cable is Belden® 295xx (xx determines gauge). This cable has four (4) XLPE insulated conductors with a 100% coverage foil and an 85% coverage copper braided shield (with drain wire) surrounded by a PVC jacket.

Other types of shielded cable are available, but the selection of these types may limit the allowable cable length. Particularly, some of the newer cables twist 4 conductors of THHN wire and wrap them tightly with a foil shield. This construction can greatly increase the cable charging current required and reduce the overall drive performance. Unless specified in the individual distance tables as tested with the drive, these cables are not recommended and their performance against the lead length limits supplied is not known.

### Armored Cable

Cable with continuous aluminum armor is often recommended in drive system applications or specific industries. It offers most of the advantages of standard shielded cable and also combines considerable mechanical strength and resistance to moisture. It can be installed in concealed and exposed manners and removes the requirement for conduit (EMT) in the installation. It can also be directly buried or embedded in concrete.

Because noise containment can be affected by incidental grounding of the armor to building steel when the cable is mounted, it is recommended the armored cable have an overall PVC jacket. Refer to "Wire Types," in publication DRIVES-IN001, *Wiring and Grounding Guidelines for Pulse Width Modulated (PWM) AC Drives*.

Interlocked armor is acceptable for shorter cable runs, but continuous welded armor is preferred.

Best performance is achieved with 3 spaced ground conductors, but acceptable performance below 200 HP is provided via a single ground conductor.

### Recommended Shielded / Armored Cable

| Location | Rating/Type | Description |
|---|---|---|
| Standard (Option 1) | 600V, 90° C (194° F)<br>XHHW2/RHW-2<br>Anixter B209500-B209507, Belden 29501-29507, or equivalent | • Four tinned copper conductors with XLPE insulation.<br>• Copper braid/aluminum foil combination shield and tinned copper drain wire.<br>• PVC jacket. |
| Standard (Option 2) | Tray rated 600V, 90° C (194° F) RHH/RHW-2<br>Anixter OLF-7xxxxx or equivalent | • Three tinned copper conductors with XLPE insulation.<br>• 5 mil single helical copper tape (25% overlap min.) with three bare copper grounds in contact with shield.<br>• PVC jacket. |
| Class I & II; Division I & II | Tray rated 600V, 90° C (194° F) RHH/RHW-2<br>Anixter 7V-7xxxx-3G or equivalent | • Three bare copper conductors with XLPE insulation and impervious corrugated continuously welded aluminum armor.<br>• Black sunlight resistant PVC jacket overall.<br>• Three copper grounds on #10 AWG and smaller. |

### Single-Phase Input Power

The PowerFlex 700H and 700S drives are typically used with a three-phase input supply. The drives have been listed by UL to operate on single-phase input power with the requirement that the output current is derated by 80% of the three-phase ratings beginning on page 32.

## *Drive Ratings*

The tables on the following pages provide drive ratings (including continuous, 1 minute and 3 seconds), PWM frequency ratings, ambient operating temperatures and watts loss information.

### 400 Volt AC Input Drive Ratings

| Drive Catalog Number | Frame | kW Rating | | PWM Freq. | Temp. | Input Ratings | Output Amps | | | Watts Loss |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | kHz | °C | Amps | Cont. | 1 Min. | 3 Sec. | Watts |
| 20CC261 | 9 | 132 | - | 2 | 40 | 263 | 261 | 287 | 410 | 2700 |
| | | - | 110 | 2 | 40 | 207 | 205 | 308 | 410 | 2700 |
| 20CC300 | 9 | 160 | - | 2 | 40 | 302 | 300 | 330 | 450 | 3100 |
| | | - | 132 | 2 | 40 | 247 | 245 | 368 | 490 | 3100 |
| 20CC385 | 10 | 200 | - | 2 | 40 | 388 | 385 | 424 | 600 | 4320 |
| | | - | 160 | 2 | 40 | 302 | 300 | 450 | 600 | 4320 |
| 20CC460 | 10 | 250 | - | 2 | 40 | 463 | 460 | 506 | 770 | 5335 |
| | | - | 200 | 2 | 40 | 388 | 385 | 578 | 770 | 5335 |
| 20CC500 | 10 | 250 | - | 2 | 40 | 504 | 500 | 550 | 750 | 5921 |
| | | - | 250 | 2 | 40 | 423 | 420 | 630 | 840 | 5921 |
| 20CC590 | 11 | 315 | - | 2 | 40 | 594 | 590 | 649 | 956 | 6620 |
| | | - | 250 | 2 | 40 | 524 | 520 | 780 | 956 | 6620 |
| 20CC650 | 11 | 355 | - | 2 | 40 | 655 | 650 | 715 | 1062 | 7538 |
| | | - | 315 | 2 | 40 | 594 | 590 | 885 | 1062 | 7538 |
| 20CC730 | 11 | 400 | - | 2 | 40 | 735 | 730 | 803 | 1095 | 8312 |
| | | - | 355 | 2 | 40 | 655 | 650 | 975 | 1170 | 8312 |
| 20CC820 | 12 | 450 | - | 2 | 40 | 826 | 820 | 902 | 1230 | 9201 |
| | | - | 400 | 2 | 40 | 735 | 730 | 1095 | 1314 | 9201 |
| 20CC920 | 12 | 500 | - | 2 | 40 | 927 | 920 | 1012 | 1380 | 10670 |
| | | - | 450 | 2 | 40 | 826 | 820 | 1230 | 1476 | 10670 |
| 20CC1K0 | 12 | 560 | - | 2 | 40 | 1038 | 1030 | 1133 | 1555 | 11729 |
| | | - | 500 | 2 | 35 | 927 | 920 | 1370 | 1600 | 11729 |
| 20CC1K1 | 13 | 630 | - | 2 | 40 | 1158 | 1150 | 1265 | 1620 | 13801 |
| | | - | 560 | 2 | 40 | 1038 | 1030 | 1545 | 1620 | 13801 |
| 20CC1K3 | 13 | 710 | - | 2 | 40 | 1310 | 1300 | 1430 | 2079 | 15077 |
| | | - | 630 | 2 | 40 | 1158 | 1150 | 1725 | 2079 | 15077 |
| 20CC1K4 | 13 | 800 | - | 2 | 40 | 1461 | 1450 | 1595 | 2175 | 16511 |
| | | - | 710 | 2 | 40 | 1209 | 1200 | 1800 | 2400 | 16511 |
| 20CC1K7 | 14 | 1000 | - | 2 | 40 | 1783 | 1770 | 1947 | 2655 | 24800 |
| | | - | 900 | 2 | 40 | 1612 | 1600 | 2400 | 2880 | 24800 |
| 20CC2K1 | 14 | 1200 | - | 2 | 40 | 2166 | 2150 | 2365 | 3225 | 29900 |
| | | - | 1100 | 2 | 40 | 1954 | 1940 | 2910 | 3492 | 29900 |
| 20CC2K7 | 14 | 1600 | - | 2 | 40 | 2720 | 2700 | 2970 | 3933 | 39680 |
| | | - | 1300 | 2 | 40 | 2317 | 2300 | 3287 | 3933 | 39680 |

## 480 Volt AC Input Drive Ratings

| Drive Catalog Number | Frame | HP Rating | | PWM Freq. | Temp. | Input Ratings | Output Amps | | | Watts Loss |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | kHz | °C | Amps | Cont. | 1 Min. | 3 Sec. | Watts |
| 20CD261 | 9 | 200 | - | 2 | 40 | 252 | 261 | 287 | 410 | 2700 |
| | | - | 150 | 2 | 40 | 207 | 205 | 308 | 410 | 2700 |
| 20CD300 | 9 | 250 | - | 2 | 40 | 290 | 300 | 330 | 450 | 3100 |
| | | - | 200 | 2 | 40 | 247 | 245 | 368 | 490 | 3100 |
| 20CD385 | 10 | 300 | - | 2 | 40 | 372 | 385 | 424 | 600 | 4320 |
| | | - | 250 | 2 | 40 | 302 | 300 | 450 | 600 | 4320 |
| 20CD460 | 10 | 350 | - | 2 | 40 | 444 | 460 | 506 | 770 | 5335 |
| | | - | 300 | 2 | 40 | 388 | 385 | 578 | 770 | 5335 |
| 20CD500 | 10 | 450 | - | 2 | 40 | 483 | 500 | 550 | 750 | 5921 |
| | | - | 350 | 2 | 40 | 423 | 420 | 630 | 840 | 5921 |
| 20CD590 | 11 | 500 | - | 2 | 40 | 570 | 590 | 649 | 956 | 6620 |
| | | - | 450 | 2 | 40 | 524 | 520 | 780 | 956 | 6620 |
| 20CD650 | 11 | 500 | - | 2 | 40 | 628 | 650 | 715 | 1062 | 7538 |
| | | - | 500 | 2 | 40 | 594 | 590 | 885 | 1062 | 7538 |
| 20CD730 | 11 | 600 | - | 2 | 40 | 705 | 730 | 803 | 1095 | 8312 |
| | | - | 500 | 2 | 40 | 655 | 650 | 975 | 1170 | 8312 |
| 20CD820 | 12 | 700 | - | 2 | 40 | 792 | 820 | 902 | 1230 | 9201 |
| | | - | 600 | 2 | 40 | 735 | 730 | 1095 | 1314 | 9201 |
| 20CD920 | 12 | 800 | - | 2 | 40 | 888 | 920 | 1012 | 1380 | 10670 |
| | | - | 700 | 2 | 40 | 826 | 820 | 1230 | 1476 | 10670 |
| 20CD1K0 | 12 | 900 | - | 2 | 40 | 994 | 1030 | 1133 | 1555 | 11729 |
| | | - | 800 | 2 | 35 | 927 | 920 | 1370 | 1600 | 11729 |
| 20CD1K1 | 13 | 1000 | - | 2 | 40 | 1110 | 1150 | 1265 | 1620 | 13801 |
| | | - | 900 | 2 | 40 | 994 | 1030 | 1545 | 1620 | 13801 |
| 20CD1K3 | 13 | 1200 | - | 2 | 40 | 1255 | 1300 | 1430 | 2079 | 15077 |
| | | - | 1000 | 2 | 40 | 1110 | 1150 | 1725 | 2079 | 15077 |
| 20CD1K4 | 13 | 1250 | - | 2 | 40 | 1400 | 1450 | 1595 | 2175 | 16511 |
| | | - | 1000 | 2 | 40 | 1158 | 1200 | 1800 | 2400 | 16511 |
| 20CD1K7 | 14 | 1500 | - | 2 | 40 | 1709 | 1770 | 1947 | 2655 | 24800 |
| | | - | 1400 | 2 | 40 | 1545 | 1600 | 2400 | 2880 | 24800 |
| 20CD2K1 | 14 | 1900 | - | 2 | 40 | 2076 | 2150 | 2365 | 3225 | 29900 |
| | | - | 1700 | 2 | 40 | 1873 | 1940 | 2910 | 3492 | 29900 |
| 20CD2K7 | 14 | 2300 | - | 2 | 40 | 2607 | 2700 | 2970 | 3933 | 39680 |
| | | - | 2000 | 2 | 40 | 2220 | 2300 | 3287 | 3933 | 39680 |

## 600 Volt AC Input Drive Ratings

| Drive Catalog Number | Frame | HP Rating | | PWM Freq. | Temp. | Input Ratings | Output Amps | | | Watts Loss |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | kHz | °C | Amps | Cont. | 1 Min. | 3 Sec. | Watts |
| 20CE170 | 9 | 150 | – | 1.5 | 40 | 164 | 170 | 187 | 245 | – |
| | | – | 150 | 1.5 | 40 | 139 | 144 | 216 | 245 | – |
| 20CE208 | 9 | 200 | – | 1.5 | 35 | 201 | 208 | 230 | 289 | – |
| | | – | 150 | 1.5 | 40 | 164 | 170 | 250 | 289 | – |
| 20CE261 | 10 | 250 | – | 1.5 | 40 | 252 | 261 | 287 | 375 | 4206 |
| | | – | 200 | 1.5 | 40 | 201 | 208 | 312 | 375 | 4206 |
| 20CE325 | 10 | 350 | – | 1.5 | 40 | 314 | 325 | 358 | 470 | 4751 |
| | | – | 250 | 1.5 | 40 | 252 | 261 | 392 | 470 | 4751 |
| 20CE385 | 10 | 400 | – | 1.5 | 40 | 372 | 385 | 424 | 585 | 5527 |
| | | – | 350 | 1.5 | 40 | 314 | 325 | 488 | 585 | 5527 |
| 20CE416 | 10 | 450 | – | 1.5 | 35 | 402 | 416 | 458 | 585 | 5622 |
| | | – | 350 | 1.5 | 40 | 314 | 325 | 488 | 585 | 5622 |
| 20CE460 | 11 | 500 | – | 1.5 | 40 | 444 | 460 | 506 | 693 | 6345 |
| | | – | 400 | 1.5 | 40 | 372 | 385 | 578 | 693 | 6345 |
| 20CE502 | 11 | 500 | – | 1.5 | 40 | 485 | 502 | 552 | 828 | 6925 |
| | | – | 500 | 1.5 | 40 | 444 | 460 | 690 | 828 | 6925 |

| Drive Catalog Number | Frame | HP Rating | | PWM Freq. | Temp. | Input Ratings | Output Amps | | | Watts Loss |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | kHz | °C | Amps | Cont. | 1 Min. | 3 Sec. | Watts |
| 20CE590 | 11 | 600 | – | 1.5 | 35 | 570 | 590 | 649 | 885 | 7539 |
| | | – | 500 | 1.5 | 35 | 485 | 502 | 753 | 904 | 7539 |
| 20CE650 | 12 | 700 | – | 1.5 | 40 | 628 | 650 | 715 | 1062 | 9502 |
| | | – | 650 | 1.5 | 40 | 570 | 590 | 885 | 1062 | 9502 |
| 20CE750 | 12 | 800 | – | 1.5 | 40 | 724 | 750 | 825 | 1170 | 10570 |
| | | – | 700 | 1.5 | 40 | 628 | 650 | 975 | 1170 | 10570 |
| 20CE820 | 12 | 900 | – | 1.5 | 35 | 792 | 820 | 902 | 1170 | 11082 |
| | | – | 700 | 1.5 | 35 | 628 | 650 | 975 | 1170 | 11082 |
| 20CE920 | 13 | 1000 | – | 1.5 | 40 | 888 | 920 | 1012 | 1380 | 12690 |
| | | – | 900 | 1.5 | 40 | 792 | 820 | 1230 | 1410 | 12690 |
| 20CE1K0 | 13 | 1100 | – | 1.5 | 40 | 994 | 1030 | 1133 | 1545 | 15907 |
| | | – | 1000 | 1.5 | 40 | 888 | 920 | 1380 | 1755 | 15907 |
| 20CE1K1 | 13 | 1300 | – | 1.5 | 35 | 1139 | 1180 | 1298 | 1755 | 17306 |
| | | – | 1100 | 1.5 | 35 | 994 | 1030 | 1463 | 1755 | 17306 |
| 20CE1K5 | 14 | 1600 | – | 1.5 | 40 | 1448 | 1500 | 1650 | 2250 | 22500 |
| | | – | 1400 | 1.5 | 40 | 1255 | 1300 | 1950 | 2340 | 22500 |
| 20CE1K9 | 14 | 2000 | – | 1.5 | 40 | 1834 | 1900 | 2090 | 2700 | 28500 |
| | | – | 1600 | 1.5 | 40 | 1448 | 1500 | 2250 | 2700 | 28500 |
| 20CE2K2 | 14 | 2400 | – | 1.5 | 30 | 2172 | 2250 | 2475 | 3335 | 33400 |
| | | – | 2000 | 1.5 | 30 | 1834 | 1900 | 2782 | 3335 | 33400 |

## 690 Volt AC Input Drive Ratings

| Drive Catalog Number | Frame | kW Rating | | PWM Freq. | Temp. | Input Ratings | Output Amps | | | Watts Loss |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | kHz | °C | Amps | Cont. | 1 Min. | 3 Sec. | Watts |
| 20CF170 | 9 | 160 | – | 2 | 40 | 171 | 170 | 187 | 245 | – |
| | | – | 132 | 2 | 40 | 145 | 144 | 216 | 245 | – |
| 20CF208 | 9 | 200 | – | 2 | 35 | 210 | 208 | 230 | 289 | – |
| | | – | 160 | 2 | 40 | 171 | 170 | 250 | 289 | – |
| 20CF261 | 10 | 250 | – | 2 | 40 | 263 | 261 | 287 | 375 | 4206 |
| | | – | 200 | 2 | 40 | 210 | 208 | 312 | 375 | 4206 |
| 20CF325 | 10 | 315 | – | 2 | 40 | 327 | 325 | 358 | 470 | 4751 |
| | | – | 250 | 2 | 40 | 263 | 261 | 392 | 470 | 4751 |
| 20CF385 | 10 | 355 | – | 2 | 40 | 388 | 385 | 424 | 585 | 5527 |
| | | – | 315 | 2 | 40 | 327 | 325 | 488 | 585 | 5527 |
| 20CF416 | 10 | 400 | – | 2 | 35 | 419 | 416 | 458 | 585 | 5622 |
| | | – | 315 | 2 | 40 | 327 | 325 | 488 | 585 | 5622 |
| 20CF460 | 11 | 450 | – | 2 | 40 | 463 | 460 | 506 | 693 | 6345 |
| | | – | 355 | 2 | 40 | 388 | 385 | 578 | 693 | 6345 |
| 20CF502 | 11 | 500 | – | 2 | 40 | 506 | 502 | 552 | 828 | 6925 |
| | | – | 400 | 2 | 40 | 463 | 460 | 690 | 828 | 6925 |
| 20CF590 | 11 | 560 | – | 2 | 35 | 594 | 590 | 649 | 885 | 7539 |
| | | – | 500 | 2 | 35 | 506 | 502 | 753 | 904 | 7539 |
| 20CF650 | 12 | 630 | – | 2 | 40 | 655 | 650 | 715 | 1062 | 9502 |
| | | – | 560 | 2 | 40 | 594 | 590 | 885 | 1062 | 9502 |
| 20CF750 | 12 | 710 | – | 2 | 40 | 756 | 750 | 825 | 1170 | 10570 |
| | | – | 630 | 2 | 40 | 655 | 650 | 975 | 1170 | 10570 |
| 20CF820 | 12 | 800 | – | 2 | 35 | 826 | 820 | 902 | 1170 | 11082 |
| | | – | 630 | 2 | 35 | 655 | 650 | 975 | 1170 | 11082 |
| 20CF920 | 13 | 900 | – | 2 | 40 | 927 | 920 | 1012 | 1380 | 12690 |
| | | – | 800 | 2 | 40 | 826 | 820 | 1230 | 1410 | 12690 |
| 20CF1K0 | 13 | 1000 | – | 2 | 40 | 1038 | 1030 | 1133 | 1545 | 15907 |
| | | – | 900 | 2 | 40 | 927 | 920 | 1380 | 1755 | 15907 |
| 20CF1K1 | 13 | 1100 | – | 2 | 35 | 1189 | 1180 | 1298 | 1755 | 17306 |
| | | – | 1000 | 2 | 35 | 1038 | 1030 | 1463 | 1755 | 17306 |
| 20CF1K5 | 14 | 1500 | – | 2 | 40 | 1511 | 1500 | 1650 | 2250 | 22500 |
| | | – | 1300 | 2 | 40 | 1310 | 1300 | 1950 | 2340 | 22500 |

| Drive Catalog Number | Frame | kW Rating | | PWM Freq. | Temp. | Input Ratings | Output Amps | | | Watts Loss |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | kHz | °C | Amps | Cont. | 1 Min. | 3 Sec. | Watts |
| 20CF1K9 | 14 | 1800 | – | 2 | 40 | 1914 | 1900 | 2090 | 2700 | 28500 |
| | | – | 1500 | 2 | 40 | 1511 | 1500 | 2250 | 2700 | 28500 |
| 20CF2K2 | 14 | 2000 | – | 2 | 30 | 2267 | 2250 | 2475 | 3335 | 33400 |
| | | – | 1800 | 2 | 30 | 1914 | 1900 | 2782 | 3335 | 33400 |

## 540 Volt DC Input Drive Ratings

| Drive Catalog Number | Frame | kW Rating | | PWM Freq. | Temp. | DC Input Ratings | Output Amps | | | Watts Loss |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | kHz | °C | Amps | Cont. | 1 Min. | 3 Sec. | Watts |
| 20CH261 | 9 | 132 | - | 2 | 40 | 307 | 261 | 287 | 410 | 1890 |
| | | - | 110 | 2 | 40 | 241 | 205 | 308 | 410 | 1890 |
| 20CH300 | 9 | 160 | - | 2 | 40 | 353 | 300 | 330 | 450 | 2170 |
| | | - | 132 | 2 | 40 | 288 | 245 | 368 | 490 | 2170 |
| 20CH385 | 10 | 200 | - | 2 | 40 | 453 | 385 | 424 | 600 | 3240 |
| | | - | 160 | 2 | 40 | 353 | 300 | 450 | 600 | 3240 |
| 20CH460 | 10 | 250 | - | 2 | 40 | 541 | 460 | 506 | 770 | 4001 |
| | | - | 200 | 2 | 40 | 453 | 385 | 578 | 770 | 4001 |
| 20CH500 | 10 | 250 | - | 2 | 40 | 589 | 500 | 550 | 750 | 4441 |
| | | - | 250 | 2 | 40 | 494 | 420 | 630 | 840 | 4441 |
| 20CH590 | 11 | 315 | - | 2 | 40 | 695 | 590 | 649 | 956 | 4700 |
| | | - | 250 | 2 | 40 | 612 | 520 | 780 | 956 | 4700 |
| 20CH650 | 11 | 355 | - | 2 | 40 | 765 | 650 | 715 | 1062 | 5352 |
| | | - | 315 | 2 | 40 | 695 | 590 | 885 | 1062 | 5352 |
| 20CH730 | 11 | 400 | - | 2 | 40 | 859 | 730 | 803 | 1095 | 5902 |
| | | - | 355 | 2 | 40 | 765 | 650 | 975 | 1170 | 5902 |
| 20CH820 | 12 | 450 | - | 2 | 40 | 965 | 820 | 902 | 1230 | 6901 |
| | | - | 400 | 2 | 40 | 859 | 730 | 1095 | 1314 | 6901 |
| 20CH920 | 12 | 500 | - | 2 | 40 | 1083 | 920 | 1012 | 1380 | 8003 |
| | | - | 450 | 2 | 40 | 965 | 820 | 1230 | 1476 | 8003 |
| 20CH1K0 | 12 | 560 | - | 2 | 40 | 1213 | 1030 | 1133 | 1555 | 8797 |
| | | - | 500 | 2 | 35 | 1083 | 920 | 1370 | 1600 | 8797 |
| 20CH1K1 | 13 | 630 | - | 2 | 40 | 1354 | 1150 | 1265 | 1620 | 10627 |
| | | - | 560 | 2 | 40 | 1213 | 1030 | 1545 | 1620 | 10627 |
| 20CH1K3 | 13 | 710 | - | 2 | 40 | 1530 | 1300 | 1430 | 2079 | 11609 |
| | | - | 630 | 2 | 40 | 1354 | 1150 | 1725 | 2079 | 11609 |
| 20CH1K4 | 13 | 800 | - | 2 | 40 | 1707 | 1450 | 1595 | 2175 | 12713 |
| | | - | 710 | 2 | 40 | 1413 | 1200 | 1800 | 2400 | 12713 |
| 20CH1K7 | 14 | 1000 | - | 2 | 40 | 2084 | 1770 | 1947 | 2655 | 19096 |
| | | - | 900 | 2 | 40 | 1883 | 1600 | 2400 | 2880 | 19096 |
| 20CH2K1 | 14 | 1200 | - | 2 | 40 | 2531 | 2150 | 2365 | 3225 | 23023 |
| | | - | 1100 | 2 | 40 | 2284 | 1940 | 2910 | 3492 | 23023 |
| 20CH2K7 | 14 | 1600 | - | 2 | 40 | 3178 | 2700 | 2970 | 3933 | 30554 |
| | | - | 1300 | 2 | 40 | 2708 | 2300 | 3287 | 3933 | 30554 |

## 650 Volt DC Input Drive Ratings

| Drive Catalog Number | Frame | HP Rating | | PWM Freq. | Temp. | DC Input Ratings | Output Amps | | | Watts Loss |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | kHz | °C | Amps | Cont. | 1 Min. | 3 Sec. | Watts |
| 20CJ261 | 9 | 200 | - | 2 | 40 | 294 | 261 | 287 | 410 | 1890 |
| | | - | 150 | 2 | 40 | 231 | 205 | 308 | 410 | 1890 |
| 20CCJ300 | 9 | 250 | - | 2 | 40 | 338 | 300 | 330 | 450 | 2170 |
| | | - | 200 | 2 | 40 | 294 | 245 | 368 | 490 | 2170 |
| 20CJ385 | 10 | 300 | - | 2 | 40 | 434 | 385 | 424 | 600 | 3240 |
| | | - | 250 | 2 | 40 | 338 | 300 | 450 | 600 | 3240 |
| 20CJ460 | 10 | 350 | - | 2 | 40 | 519 | 460 | 506 | 770 | 4001 |
| | | - | 300 | 2 | 40 | 434 | 385 | 578 | 770 | 4001 |

| Drive Catalog Number | Frame | HP Rating | | PWM Freq. | Temp. | DC Input Ratings | Output Amps | | | Watts Loss |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | kHz | °C | Amps | Cont. | 1 Min. | 3 Sec. | Watts |
| 20CJ500 | 10 | 450 | - | 2 | 40 | 564 | 500 | 550 | 750 | 4441 |
| | | - | 350 | 2 | 40 | 474 | 420 | 630 | 840 | 4441 |
| 20CJ590 | 11 | 500 | - | 2 | 40 | 666 | 590 | 649 | 956 | 4700 |
| | | - | 450 | 2 | 40 | 587 | 520 | 780 | 956 | 4700 |
| 20CJ650 | 11 | 500 | - | 2 | 40 | 733 | 650 | 715 | 1062 | 5352 |
| | | - | 500 | 2 | 40 | 666 | 590 | 885 | 1062 | 5352 |
| 20CJ730 | 11 | 600 | - | 2 | 40 | 824 | 730 | 803 | 1095 | 5902 |
| | | - | 500 | 2 | 40 | 733 | 650 | 975 | 1170 | 5902 |
| 20CJ820 | 12 | 700 | - | 2 | 40 | 925 | 820 | 902 | 1230 | 6901 |
| | | - | 600 | 2 | 40 | 824 | 730 | 1095 | 1314 | 6901 |
| 20CJ920 | 12 | 800 | - | 2 | 40 | 1038 | 920 | 1012 | 1380 | 8003 |
| | | - | 700 | 2 | 40 | 925 | 820 | 1230 | 1476 | 8003 |
| 20CJ1K0 | 12 | 900 | - | 2 | 40 | 1162 | 1030 | 1133 | 1555 | 8797 |
| | | - | 800 | 2 | 35 | 1038 | 920 | 1370 | 1600 | 8797 |
| 20CJ1K1 | 13 | 1000 | - | 2 | 40 | 1297 | 1150 | 1265 | 1620 | 10627 |
| | | - | 900 | 2 | 40 | 1162 | 1030 | 1545 | 1620 | 10627 |
| 20CJ1K3 | 13 | 1200 | - | 2 | 40 | 1467 | 1300 | 1430 | 2079 | 11609 |
| | | - | 1000 | 2 | 40 | 1297 | 1150 | 1725 | 2079 | 11609 |
| 20CJ1K4 | 13 | 1250 | - | 2 | 40 | 1636 | 1450 | 1595 | 2175 | 12713 |
| | | - | 1000 | 2 | 40 | 1354 | 1200 | 1800 | 2400 | 12713 |
| 20CJ1K7 | 14 | 1500 | - | 2 | 40 | 1997 | 1770 | 1947 | 2655 | 19096 |
| | | - | 1400 | 2 | 40 | 1805 | 1600 | 2400 | 2880 | 19096 |
| 20CJ2K1 | 14 | 1900 | - | 2 | 40 | 2425 | 2150 | 2365 | 3225 | 23023 |
| | | - | 1700 | 2 | 40 | 2189 | 1940 | 2910 | 3492 | 23023 |
| 20CJ2K7 | 14 | 2300 | - | 2 | 40 | 3046 | 2700 | 2970 | 3933 | 30554 |
| | | - | 2000 | 2 | 40 | 2595 | 2300 | 3287 | 3933 | 30554 |

### 810 Volt DC Input Drive Ratings

| Drive Catalog Number | Frame | HP Rating | | PWM Freq. | Temp. | DC Input Ratings | Output Amps | | | Watts Loss |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | kHz | °C | Amps | Cont. | 1 Min. | 3 Sec. | Watts |
| 20CK170 | 9 | 150 | – | 2 | 40 | 192 | 170 | 187 | 245 | – |
| | | – | 150 | 2 | 40 | 162 | 144 | 216 | 245 | – |
| 20CK208 | 9 | 200 | – | 2 | 35 | 235 | 208 | 230 | 289 | – |
| | | – | 150 | 2 | 40 | 192 | 170 | 250 | 289 | – |
| 20CK261 | 10 | 250 | – | 2 | 40 | 294 | 261 | 287 | 375 | 3155 |
| | | – | 200 | 2 | 40 | 235 | 208 | 312 | 375 | 3155 |
| 20CK325 | 10 | 350 | – | 2 | 40 | 367 | 325 | 358 | 470 | 3563 |
| | | – | 250 | 2 | 40 | 294 | 261 | 392 | 470 | 3563 |
| 20CK385 | 10 | 400 | – | 2 | 40 | 434 | 385 | 424 | 585 | 4145 |
| | | – | 350 | 2 | 40 | 367 | 325 | 488 | 585 | 4145 |
| 20CK416 | 10 | 450 | – | 2 | 35 | 469 | 416 | 458 | 585 | 4217 |
| | | – | 350 | 2 | 40 | 367 | 325 | 488 | 585 | 4217 |
| 20CK460 | 11 | 500 | – | 2 | 40 | 519 | 460 | 506 | 693 | 4505 |
| | | – | 400 | 2 | 40 | 434 | 385 | 578 | 693 | 4505 |
| 20CK502 | 11 | 500 | – | 2 | 40 | 566 | 502 | 552 | 828 | 4917 |
| | | – | 500 | 2 | 40 | 519 | 460 | 690 | 828 | 4917 |
| 20CK590 | 11 | 600 | – | 2 | 35 | 666 | 590 | 649 | 885 | 5353 |
| | | – | 500 | 2 | 35 | 566 | 502 | 753 | 904 | 5353 |
| 20CK650 | 12 | 700 | – | 2 | 40 | 733 | 650 | 715 | 1062 | 7127 |
| | | – | 650 | 2 | 40 | 666 | 590 | 885 | 1062 | 7127 |
| 20CK750 | 12 | 800 | – | 2 | 40 | 846 | 750 | 825 | 1170 | 7928 |
| | | – | 700 | 2 | 40 | 733 | 650 | 975 | 1170 | 7928 |
| 20CK820 | 12 | 900 | – | 2 | 35 | 925 | 820 | 902 | 1170 | 8312 |
| | | – | 700 | 2 | 35 | 733 | 650 | 975 | 1170 | 8312 |
| 20CK920 | 13 | 1000 | – | 2 | 40 | 1038 | 920 | 1012 | 1380 | 9771 |
| | | – | 900 | 2 | 40 | 925 | 820 | 1230 | 1410 | 9771 |

| Drive Catalog Number | Frame | HP Rating | | PWM Freq. | Temp. | DC Input Ratings | Output Amps | | | Watts Loss |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | kHz | °C | Amps | Cont. | 1 Min. | 3 Sec. | Watts |
| 20CK1K0 | 13 | 1100 | – | 2 | 40 | 1162 | 1030 | 1133 | 1545 | 12248 |
| | | – | 1000 | 2 | 40 | 1038 | 920 | 1380 | 1755 | 12248 |
| 20CK1K1 | 13 | 1300 | – | 2 | 35 | 1331 | 1180 | 1298 | 1755 | 13326 |
| | | – | 1100 | 2 | 35 | 1162 | 1030 | 1463 | 1755 | 13326 |
| 20CK1K5 | 14 | 1600 | – | 2 | 40 | 1692 | 1500 | 1650 | 2250 | 17325 |
| | | – | 1400 | 2 | 40 | 1467 | 1300 | 1950 | 2340 | 17325 |
| 20CK1K9 | 14 | 2000 | – | 2 | 40 | 2143 | 1900 | 2090 | 2700 | 21945 |
| | | – | 1600 | 2 | 40 | 1692 | 1500 | 2250 | 2700 | 21945 |
| 20CK2K2 | 14 | 2400 | – | 2 | 30 | 2538 | 2250 | 2475 | 3335 | 25718 |
| | | – | 2000 | 2 | 30 | 2143 | 1900 | 2782 | 3335 | 25718 |

### 932 Volt DC Input Drive Ratings

| Drive Catalog Number | Frame | kW Rating | | PWM Freq. | Temp. | DC Input Ratings | Output Amps | | | Watts Loss |
|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | kHz | °C | Amps | Cont. | 1 Min. | 3 Sec. | Watts |
| 20CM170 | 9 | 160 | – | 2 | 40 | 200 | 170 | 187 | 245 | – |
| | | – | 132 | 2 | 40 | 170 | 144 | 216 | 245 | – |
| 20CM208 | 9 | 200 | – | 2 | 35 | 245 | 208 | 230 | 289 | – |
| | | – | 160 | 2 | 40 | 200 | 170 | 250 | 289 | – |
| 20CM261 | 10 | 250 | – | 2 | 40 | 307 | 261 | 287 | 375 | 3155 |
| | | – | 200 | 2 | 40 | 245 | 208 | 312 | 375 | 3155 |
| 20CM325 | 10 | 315 | – | 2 | 40 | 383 | 325 | 358 | 470 | 3563 |
| | | – | 250 | 2 | 40 | 307 | 261 | 392 | 470 | 3563 |
| 20CM385 | 10 | 355 | – | 2 | 40 | 453 | 385 | 424 | 585 | 4145 |
| | | – | 315 | 2 | 40 | 383 | 325 | 488 | 585 | 4145 |
| 20CM416 | 10 | 400 | – | 2 | 35 | 490 | 416 | 458 | 585 | 4217 |
| | | – | 315 | 2 | 40 | 383 | 325 | 488 | 585 | 4217 |
| 20CM460 | 11 | 450 | – | 2 | 40 | 542 | 460 | 506 | 693 | 4505 |
| | | – | 355 | 2 | 40 | 453 | 385 | 578 | 693 | 4505 |
| 20CM502 | 11 | 500 | – | 2 | 40 | 591 | 502 | 552 | 828 | 4917 |
| | | – | 400 | 2 | 40 | 542 | 460 | 690 | 828 | 4917 |
| 20CM590 | 11 | 560 | – | 2 | 35 | 695 | 590 | 649 | 885 | 5353 |
| | | – | 500 | 2 | 35 | 591 | 502 | 753 | 904 | 5353 |
| 20CM650 | 12 | 630 | – | 2 | 40 | 765 | 650 | 715 | 1062 | 7127 |
| | | – | 560 | 2 | 40 | 695 | 590 | 885 | 1062 | 7127 |
| 20CM750 | 12 | 710 | – | 2 | 40 | 883 | 750 | 825 | 1170 | 7928 |
| | | – | 630 | 2 | 40 | 765 | 650 | 975 | 1170 | 7928 |
| 20CM820 | 12 | 800 | – | 2 | 35 | 965 | 820 | 902 | 1170 | 8312 |
| | | – | 630 | 2 | 35 | 765 | 650 | 975 | 1170 | 8312 |
| 20CM920 | 13 | 900 | – | 2 | 40 | 1038 | 920 | 1012 | 1380 | 9771 |
| | | – | 800 | 2 | 40 | 925 | 820 | 1230 | 1410 | 9771 |
| 20CM1K0 | 13 | 1000 | – | 2 | 40 | 1162 | 1030 | 1133 | 1545 | 12248 |
| | | – | 900 | 2 | 40 | 1038 | 920 | 1380 | 1755 | 12248 |
| 20CM1K1 | 13 | 1100 | – | 2 | 35 | 1331 | 1180 | 1298 | 1755 | 13326 |
| | | – | 1000 | 2 | 35 | 1162 | 1030 | 1463 | 1755 | 13326 |
| 20CM1K5 | 14 | 1500 | – | 2 | 40 | 1766 | 1500 | 1650 | 2250 | 17325 |
| | | – | 1300 | 2 | 40 | 1530 | 1300 | 1950 | 2340 | 17325 |
| 20CM1K9 | 14 | 1800 | – | 2 | 40 | 2237 | 1900 | 2090 | 2700 | 21945 |
| | | – | 1500 | 2 | 40 | 1766 | 1500 | 2250 | 2700 | 21945 |
| 20CM2K2 | 14 | 2000 | – | 2 | 30 | 2649 | 2250 | 2475 | 3335 | 25718 |
| | | – | 1800 | 2 | 30 | 2237 | 1900 | 2782 | 3335 | 25718 |

## *Drive Fuse & Circuit Breaker Ratings*

The tables on the following pages provide recommended AC line input fuse and circuit breaker information. Tables with DC Link fuse recommendations are also provided.

### Fuse Size

Fuse sizes are the recommended minimum size based on 40º C ambient, 75º C wiring and U.S. N.E.C. Other country, state or local codes may require different fuse/circuit breaker ratings.

### Fuse Type

The recommend fuse type is listed below. If available current ratings do not match the tables provided, the fuse rating that exceeds the drive continuous rating should be chosen.

- IEC

  BS88 (British Standard) Parts 1 & 2 (1), EN60269-1, Parts 1 & 2, type go or equivalent should be used for these drives.

- UL

  UL requirements specify that UL Class CC, T or J fuses must be used for all drives in this section (2).

### 400 Volt AC Input Drive Protection Devices

| Drive Catalog Number | Frame | kW Rating | | Input Ratings | Dual Element Time Delay Fuse | | Non-Time Delay Fuse | | Bussmann Style Semi-Conductor Fuse | Circuit Breaker (4) | Motor Circuit Protector (5) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | Amps | Min. (1) | Max. (2) | Min. (2) | Max. (3) | | Max. | Max. |
| 20CC261 | 9 | 132 | - | 263 | 350 | 550 | 350 | 700 | 170M5813 | 700 | 400 |
| | | - | 110 | 207 | 275 | 450 | 275 | 600 | 170M5813 | 600 | 300 |
| 20CC300 | 9 | 160 | - | 302 | 400 | 650 | 400 | 900 | 170M5813 | 900 | 400 |
| | | - | 132 | 247 | 350 | 500 | 350 | 700 | 170M5813 | 700 | 400 |
| 20CC385 | 10 | 200 | - | 388 | 500 | 850 | 500 | 1100 | 170M5813 | 1100 | 600 |
| | | - | 160 | 302 | 400 | 650 | 400 | 900 | 170M5813 | 900 | 400 |
| 20CC460 | 10 | 250 | - | 463 | 600 | 1000 | 600 | 1300 | 170M8547 | 1300 | 600 |
| | | - | 200 | 388 | 500 | 850 | 500 | 1100 | 170M8547 | 1100 | 600 |
| 20CC500 | 10 | 250 | - | 504 | 650 | 1100 | 650 | 1500 | 170M8547 | 1500 | 700 |
| | | - | 250 | 423 | 550 | 900 | 550 | 1200 | 170M8547 | 1200 | 600 |
| 20CC590 | 11 | 315 | - | 594 | 750 (1 per phs)<br>375 (2 per phs) | 1300 | 750 (1 per phs)<br>375 (2 per phs) | 1700 | 170M5813 | 1700 | 800 |
| | | - | 250 | 524 | 700 (1 per phs)<br>350 (2 per phs) | 1100 | 700 (1 per phs)<br>350 (2 per phs) | 1500 | 170M5813 | 1500 | 700 |
| 20CC650 | 11 | 355 | - | 655 | 850 (1 per phs)<br>425 (2 per phs) | 1400 | 850 (1 per phs)<br>425 (2 per phs) | 1900 | 170M5813 | 1900 | 1000 |
| | | - | 315 | 594 | 750 (1 per phs)<br>375 (2 per phs) | 1300 | 750 (1 per phs)<br>375 (2 per phs) | 1700 | 170M5813 | 1700 | 800 |
| 20CC730 | 11 | 400 | - | 735 | 1000 (1 per phs)<br>500 (2 per phs) | 1600 | 1000 (1 per phs)<br>500 (2 per phs) | 2100 | 170M5813 | 2100 | 1200 |
| | | - | 355 | 655 | 850 (1 per phs)<br>425 (2 per phs) | 1400 | 850 (1 per phs)<br>425 (2 per phs) | 1900 | 170M5813 | 1900 | 1000 |
| 20CC820 | 12 | 450 | - | 826 | 1100 (1 per phs)<br>550 (2 per phs) | 1800 | 1100 (1 per phs)<br>550 (2 per phs) | 2400 | 170M8547 | 2400 | 1200 |
| | | - | 400 | 735 | 1000 (1 per phs)<br>500 (2 per phs) | 1600 | 1000 (1 per phs)<br>500 (2 per phs) | 2100 | 170M8547 | 2100 | 1200 |
| 20CC920 | 12 | 500 | - | 927 | 1200 (1 per phs)<br>600 (2 per phs) | 2000 | 1200 (1 per phs)<br>600 (2 per phs) | 2700 | 170M8547 | 2700 | 1200 |
| | | - | 450 | 826 | 1100 (1 per phs)<br>550 (2 per phs) | 1800 | 1100 (1 per phs)<br>550 (2 per phs) | 2400 | 170M8547 | 2400 | 1200 |

(1) Typical designations include, but may not be limited to the following; Ora 1 & 2:AC, AD, BC, BD, CD, DD, ED, EFS, EF, FF, FG, GF, GG, GH
(2) Typical designations include; Type CC - KTK, FNQ-R
Type J - JKS, LPJ
Type T - JJS, JJN

| Drive Catalog Number | Frame | kW Rating | | Input Ratings | Dual Element Time Delay Fuse | | Non-Time Delay Fuse | | Bussmann Style Semi-Conductor Fuse | Circuit Breaker(4) | Motor Circuit Protector(5) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | Amps | Min. (1) | Max.(2) | Min.(2) | Max.(3) | | Max. | Max. |
| 20CC1K0 | 12 | 560 | - | 1038 | 1350 (1 per phs)<br>700 (2 per phs) | 2300 | 1350 (1 per phs)<br>700 (2 per phs) | 3000 | 170M8547 | 3000 | 1400 |
| | | - | 500 | 927 | 1200 (1 per phs)<br>600 (2 per phs) | 2000 | 1200 (1 per phs)<br>600 (2 per phs) | 2700 | 170M8547 | 2700 | 1200 |
| 20CC1K1 | 13 | 630 | - | 1158 | 1350 (1 per phs)<br>700 (2 per phs) | 2300 | 1350 (1 per phs)<br>700 (2 per phs) | 3000 | 170M6466 (3) | 3000 | 1400 |
| | | - | 560 | 1038 | 1500 (1 per phs)<br>750 (2 per phs) | 2500 | 1500 (1 per phs)<br>750 (2 per phs) | 3400 | 170M6466 (4) | 3400 | 1500 |
| 20CC1K3 | 13 | 710 | - | 1310 | 1700 (1 per phs)<br>850 (2 per phs) | 2900 | 1700 (1 per phs)<br>850 (2 per phs) | 3900 | 170M6466 (4) | 3900 | 1700 |
| | | - | 630 | 1158 | 1500 (1 per phs)<br>750 (2 per phs) | 2500 | 1500 (1 per phs)<br>750 (2 per phs) | 3400 | 170M6466 (4) | 3400 | 1500 |
| 20CC1K4 | 13 | 800 | - | 1461 | 1900 (1 per phs)<br>950 (2 per phs) | 3000 | 1900 (1 per phs)<br>950 (2 per phs) | 4300 | 170M6466 (4) | 4300 | 1900 |
| | | - | 710 | 1209 | 1600 (1 per phs)<br>800 (2 per phs) | 2700 | 1600 (1 per phs)<br>800 (2 per phs) | 3600 | 170M6466 (4) | 3600 | 1600 |
| 20CC1K7 | 14 | 1000 | - | 1783 | 2500 (1 per phs)<br>825 (3 per phs) | 3900 | 2500 (1 per phs)<br>825 (3 per phs) | 5300 | 170M6466 | 5300 | 2500 |
| | | - | 900 | 1612 | 2100 (1 per phs)<br>700 (3 per phs) | 3500 | 2100 (1 per phs)<br>700 (3 per phs) | 4800 | 170M6466 | 4800 | 2100 |
| 20CC2K1 | 14 | 1200 | - | 2166 | 3000 (1 per phs)<br>1000 (3 per phs) | 4800 | 3000 (1 per phs)<br>1000 (3 per phs) | 6400 | 170M6466 | 6400 | 3000 |
| | | - | 1100 | 1954 | 2500 (1 per phs)<br>825 (3 per phs) | 4300 | 2500 (1 per phs)<br>825 (3 per phs) | 5800 | 170M6466 | 5800 | 2500 |
| 20CC2K7 | 14 | 1600 | - | 2720 | 3500 (1 per phs)<br>1200 (3 per phs) | 6000 | 3500 (1 per phs)<br>1200 (3 per phs) | 8000 | 170M6466 | 8000 | 3500 |
| | | - | 1300 | 2317 | 3000 (1 per phs)<br>1000 (3 per phs) | 5000 | 3000 (1 per phs)<br>1000 (3 per phs) | 6900 | 170M6466 | 6900 | 3000 |

(1) Minimum protection device size is the lowest rated device that supplies maximum protection without nuisance tripping.
(2) Maximum protection device size is the highest rated device that supplies drive protection.
(3) These fuses and disconnect are supplied with AC input NEMA/UL Type 1 drives.
(4) Inverse time breaker. Ratings shown are maximum.
(5) Motor Circuit Protector - instantaneous trip circuit breaker. For US NEC minimum size is 125% of motor/drive FLA. Ratings shown are suggested. Instantaneous trip settings must be set to US NEC code. Not to exceed 1300% FLA.

## 480 Volt AC Input Drive Protection Devices

| Drive Catalog Number | Frame | HP Rating | | Input Ratings | Dual Element Time Delay Fuse | | Non-Time Delay Fuse | | Bussmann Style Semi-Conductor Fuse | Circuit Breaker(4) | Motor Circuit Protector(6) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | Amps | Min. (1) | Max.(2) | Min.(2) | Max.(3) | | Max. (5) | Max. |
| 20CD261 | 9 | 200 | - | 252 | 350 | 550 | 350 | 700 | 170M5813 | 700 | 400 |
| | | - | 150 | 207 | 275 | 450 | 275 | 600 | 170M5813 | 600 | 300 |
| 20CD300 | 9 | 250 | - | 290 | 400 | 650 | 400 | 900 | 170M5813 | 900 | 400 |
| | | - | 200 | 247 | 350 | 550 | 350 | 700 | 170M5813 | 700 | 400 |
| 20CD385 | 10 | 300 | - | 372 | 500 | 850 | 500 | 1100 | 170M5813 | 1100 | 600 |
| | | - | 250 | 302 | 400 | 650 | 400 | 900 | 170M5813 | 900 | 400 |
| 20CD460 | 10 | 350 | - | 444 | 600 | 1000 | 600 | 1300 | 170M8547 | 1300 | 600 |
| | | - | 300 | 388 | 500 | 850 | 500 | 1100 | 170M8547 | 1100 | 600 |
| 20CD500 | 10 | 450 | - | 483 | 650 | 1000 | 650 | 1500 | 170M8547 | 1500 | 700 |
| | | - | 350 | 423 | 550 | 900 | 550 | 1200 | 170M8547 | 1200 | 600 |
| 20CD590 | 11 | 500 | - | 570 | 750 (1 per phs)<br>375 (2 per phs) | 1300 | 750 (1 per phs)<br>375 (2 per phs) | 1700 | 170M5813 | 1700 | 800 |
| | | - | 450 | 524 | 700 (1 per phs)<br>350 (2 per phs) | 1100 | 700 (1 per phs)<br>350 (2 per phs) | 1500 | 170M5813 | 1500 | 700 |
| 20CD650 | 11 | 500 | - | 628 | 800 (1 per phs)<br>400 (2 per phs) | 1400 | 800 (1 per phs)<br>400 (2 per phs) | 1900 | 170M5813 | 1900 | 800 |
| | | - | 500 | 594 | 750 (1 per phs)<br>375 (2 per phs) | 1300 | 750 (1 per phs)<br>375 (2 per phs) | 1700 | 170M5813 | 1700 | 800 |
| 20CD730 | 11 | 600 | - | 705 | 900 (1 per phs)<br>450 (2 per phs) | 1600 | 900 (1 per phs)<br>450 (2 per phs) | 2100 | 170M5813 | 2100 | 900 |
| | | - | 500 | 655 | 850 (1 per phs)<br>425 (2 per phs) | 1400 | 850 (1 per phs)<br>425 (2 per phs) | 1900 | 170M5813 | 1900 | 900 |

| Drive Catalog Number | Frame | HP Rating | | Input Ratings | Dual Element Time Delay Fuse | | Non-Time Delay Fuse | | Bussmann Style Semi-Conductor Fuse | Circuit Breaker(4) | Motor Circuit Protector(6) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | Amps | Min. (1) | Max.(2) | Min.(2) | Max.(3) | | Max. (5) | Max. |
| 20CD820 | 12 | 700 | - | 792 | 1000 (1 per phs)<br>500 (2 per phs) | 1800 | 1000 (1 per phs)<br>500 (2 per phs) | 2400 | 170M8547 | 2400 | 1000 |
| | | - | 600 | 735 | 900 (1 per phs)<br>475 (2 per phs) | 1600 | 900 (1 per phs)<br>475 (2 per phs) | 2100 | 170M8547 | 2100 | 1000 |
| 20CD920 | 12 | 800 | - | 888 | 1200 (1 per phs)<br>600 (2 per phs) | 2000 | 1200 (1 per phs)<br>600 (2 per phs) | 2700 | 170M8547 | 2700 | 1200 |
| | | - | 700 | 826 | 1100 (1 per phs)<br>550 (2 per phs) | 1800 | 1100 (1 per phs)<br>550 (2 per phs) | 2400 | 170M8547 | 2400 | 1200 |
| 20CD1K0 | 12 | 900 | - | 994 | 1300 (1 per phs)<br>650 (2 per phs) | 2300 | 1300 (1 per phs)<br>650 (2 per phs) | 3000 | 170M8547 | 3000 | 1300 |
| | | - | 800 | 927 | 1200 (1 per phs)<br>600 (2 per phs) | 2000 | 1200 (1 per phs)<br>600 (2 per phs) | 2700 | 170M8547 | 2700 | 1200 |
| 20CD1K1 | 13 | 1000 | - | 1110 | 1400 (1 per phs)<br>700 (2 per phs) | 2500 | 1400 (1 per phs)<br>700 (2 per phs) | 3400 | 170M6466 (3) | 3400 | 1400 |
| | | - | 900 | 994 | 1300 (1 per phs)<br>650 (2 per phs) | 2300 | 1300 (1 per phs)<br>650 (2 per phs) | 3000 | 170M6466 (4) | 3000 | 1300 |
| 20CD1K3 | 13 | 1200 | - | 1255 | 1600 (1 per phs)<br>800 (2 per phs) | 2900 | 1600 (1 per phs)<br>800 (2 per phs) | 3900 | 170M6466 (4) | 3900 | 1600 |
| | | - | 1000 | 1110 | 1400 (1 per phs)<br>700 (2 per phs) | 2500 | 1400 (1 per phs)<br>700 (2 per phs) | 3400 | 170M6466 (4) | 3400 | 1400 |
| 20CD1K4 | 13 | 1250 | - | 1400 | 1800 (1 per phs)<br>900 (2 per phs) | 3200 | 1800 (1 per phs)<br>900 (2 per phs) | 4300 | 170M6466 (4) | 4300 | 1800 |
| | | - | 1000 | 1158 | 1500 (1 per phs)<br>750 (2 per phs) | 2700 | 1500 (1 per phs)<br>750 (2 per phs) | 3600 | 170M6466 (4) | 3600 | 1500 |
| 20CD1K7 | 14 | 1500 | - | 1709 | 2200 (1 per phs)<br>750 (3 per phs) | 3800 | 2200 (1 per phs)<br>750 (3 per phs) | 5300 | 170M6466 | 5300 | 2200 |
| | | - | 1400 | 1545 | 2000 (1 per phs)<br>675 (3 per phs) | 3600 | 2000 (1 per phs)<br>675 (3 per phs) | 4800 | 170M6466 | 4800 | 2000 |
| 20CD2K1 | 14 | 1900 | - | 2076 | 2600 (1 per phs)<br>900 (3 per phs) | 4800 | 2600 (1 per phs)<br>900 (3 per phs) | 6400 | 170M6466 | 6400 | 2600 |
| | | - | 1700 | 1873 | 2400 (1 per phs)<br>800 (3 per phs) | 4300 | 2400 (1 per phs)<br>800 (3 per phs) | 5800 | 170M6466 | 5800 | 2400 |
| 20CD2K7 | 14 | 2300 | - | 2607 | 3000 (1 per phs)<br>1100 (3 per phs) | 6000 | 3000 (1 per phs)<br>1100 (3 per phs) | 8000 | 170M6466 | 8000 | 3300 |
| | | - | 2000 | 2220 | 2800 (1 per phs)<br>900 (3 per phs) | 5000 | 2800 (1 per phs)<br>900 (3 per phs) | 6900 | 170M6466 | 6900 | 2800 |

(1) Minimum protection device size is the lowest rated device that supplies maximum protection without nuisance tripping.
(2) Maximum protection device size is the highest rated device that supplies drive protection.
(3) These fuses and disconnect are supplied with AC input NEMA/UL Type 1 drives.
(4) Inverse time breaker. Ratings shown are maximum.
(5) Maximum allowable rating by US NEC. Exact size must be chosen for each installation.
(6) Motor Circuit Protector - instantaneous trip circuit breaker. For US NEC minimum size is 125% of motor/drive FLA. Ratings shown are suggested. Instantaneous trip settings must be set to US NEC code. Not to exceed 1300% FLA.

### 600 Volt AC Input Drive Protection Devices

| Drive Catalog Number | Frame | HP Rating | | Input Ratings | Dual Element Time Delay Fuse | | Non-Time Delay Fuse | | Bussmann Style Semi-Conductor Fuse | Circuit Breaker(4) | Motor Circuit Protector(6) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | Amps | Min.(1) | Max.(2) | Min.(3) | Max.(4) | | Max (5) | Max. |
| 20CE170 | 9 | 150 | – | 164 | 225 | 375 | 225 | 500 | 170M3819 | 500 | 250 |
| | | – | 150 | 139 | 175 | 300 | 175 | 500 | 170M3819 | 500 | 200 |
| 20CE208 | 9 | 200 | – | 201 | 275 | 450 | 275 | 600 | 170M3819 | 600 | 300 |
| | | – | 150 | 164 | 225 | 375 | 225 | 500 | 170M3819 | 500 | 250 |
| 20CE261 | 10 | 250 | – | 252 | 325 | 575 | 325 | 775 | 170M5813 | 700 | 350 |
| | | – | 200 | 201 | 275 | 450 | 275 | 600 | 170M5813 | 600 | 300 |
| 20CE325 | 10 | 350 | – | 314 | 400 | 725 | 400 | 950 | 170M5813 | 900 | 450 |
| | | – | 250 | 252 | 325 | 575 | 325 | 775 | 170M5813 | 750 | 400 |
| 20CE385 | 10 | 400 | – | 372 | 475 | 850 | 475 | 1100 | 170M5813 | 1100 | 500 |
| | | – | 350 | 314 | 400 | 725 | 400 | 950 | 170M5813 | 900 | 450 |

| Drive Catalog Number | Frame | HP Rating | | Input Ratings | Dual Element Time Delay Fuse | | Non-Time Delay Fuse | | Bussmann Style Semi-Conductor Fuse | Circuit Breaker(4) | Motor Circuit Protector(6) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | Amps | Min.(1) | Max.(2) | Min.(3) | Max.(4) | | Max (5) | Max. |
| 20CE416 | 10 | 450 | – | 402 | 525 | 900 | 525 | 1200 | 170M5813 | 1200 | 550 |
| | | – | 350 | 314 | 400 | 725 | 400 | 950 | 170M5813 | 900 | 450 |
| 20CE460 | 11 | 500 | – | 444 | 575 (1 per phs)<br>300 (2 per phs) | 1000 | 575 (1 per phs)<br>300 (2 per phs) | 1300 | 170M8547 | 1300 | 600 |
| | | – | 400 | 372 | 475 (1 per phs)<br>250 (2 per phs) | 850 | 475 (1 per phs)<br>250 (2 per phs) | 1100 | 170M8547 | 1100 | 500 |
| 20CE502 | 11 | 500 | – | 485 | 625 (1 per phs)<br>325 (2 per phs) | 1100 | 625 (1 per phs)<br>325 (2 per phs) | 1500 | 170M8547 | 1500 | 650 |
| | | – | 500 | 444 | 575 (1 per phs)<br>300 (2 per phs) | 1000 | 575 (1 per phs)<br>300 (2 per phs) | 1300 | 170M8547 | 1300 | 600 |
| 20CE590 | 11 | 600 | – | 570 | 725 (1 per phs)<br>375(2 per phs) | 1300 | 725 (1 per phs)<br>375(2 per phs) | 1700 | 170M5813 | 1700 | 800 |
| | | – | 500 | 485 | 625 (1 per phs)<br>325 (2 per phs) | 1100 | 625 (1 per phs)<br>325 (2 per phs) | 1500 | 170M5813 | 1500 | 700 |
| 20CE650 | 12 | 700 | – | 628 | 800 (1 per phs)<br>400 (2 per phs) | 1400 | 800 (1 per phs)<br>400 (2 per phs) | 1900 | 170M5813 | 1900 | 900 |
| | | – | 650 | 570 | 725 (1 per phs)<br>375 (2 per phs) | 1300 | 725 (1 per phs)<br>375 (2 per phs) | 1700 | 170M5813 | 1700 | 800 |
| 20CE750 | 12 | 800 | – | 724 | 950 (1 per phs)<br>475 (2 per phs) | 1600 | 950 (1 per phs)<br>475 (2 per phs) | 2200 | 170M5813 | 2200 | 1000 |
| | | – | 700 | 628 | 800 (1 per phs)<br>400 (2 per phs) | 1400 | 800 (1 per phs)<br>400 (2 per phs) | 1900 | 170M5813 | 1900 | 900 |
| 20CE820 | 12 | 900 | – | 792 | 1000 (1 per phs)<br>500 (2 per phs) | 1800 | 1000 (1 per phs)<br>500 (2 per phs) | 2400 | 170M5813 | 2400 | 1100 |
| | | – | 700 | 628 | 800 (1 per phs)<br>400 (2 per phs) | 1400 | 800 (1 per phs)<br>400 (2 per phs) | 1900 | 170M5813 | 1900 | 900 |
| 20CE920 | 13 | 1000 | – | 888 | 1200 (1 per phs)<br>600 (2 per phs) | 2000 | 1200 (1 per phs)<br>600 (2 per phs) | 2700 | 170M6466 (3) | 2700 | 1200 |
| | | – | 900 | 792 | 1000 (1 per phs)<br>500 (2 per phs) | 1800 | 1000 (1 per phs)<br>500 (2 per phs) | 2400 | 170M6466 (5) | 2400 | 1100 |
| 20CE1K0 | 13 | 1100 | – | 994 | 1300 (1 per phs)<br>650 (2 per phs) | 2300 | 1300 (1 per phs)<br>650 (2 per phs) | 3000 | 170M6466 (5) | 3000 | 1300 |
| | | – | 1000 | 888 | 1200 (1 per phs)<br>600 (2 per phs) | 2000 | 1200 (1 per phs)<br>600 (2 per phs) | 2700 | 170M6466 (5) | 2700 | 1200 |
| 20CE1K1 | 13 | 1300 | – | 1139 | 1500 (1 per phs)<br>750 (2 per phs) | 2600 | 1500 (1 per phs)<br>750 (2 per phs) | 3500 | 170M6466 (5) | 3500 | 1500 |
| | | – | 1100 | 994 | 1300 (1 per phs)<br>650 (2 per phs) | 2200 | 1300 (1 per phs)<br>650 (2 per phs) | 3000 | 170M6466 (5) | 3000 | 1300 |
| 20CE1K5 | 14 | 1600 | – | 1448 | 1900 (1 per phs)<br>650 (3 per phs) | 3300 | 1900 (1 per phs)<br>650 (3 per phs) | 4500 | 170M6466 | 4500 | 1900 |
| | | – | 1400 | 1255 | 1600 (1 per phs)<br>550 (3 per phs) | 2900 | 1600 (1 per phs)<br>550 (3 per phs) | 3900 | 170M6466 | 3900 | 1700 |
| 20CE1K9 | 14 | 2000 | – | 1834 | 2300 (1 per phs)<br>800 (3 per phs) | 4200 | 2300 (1 per phs)<br>800 (3 per phs) | 5700 | 170M6466 | 5700 | 2400 |
| | | – | 1600 | 1448 | 1900 (1 per phs)<br>650 (3 per phs) | 3200 | 1900 (1 per phs)<br>650 (3 per phs) | 4500 | 170M6466 | 4500 | 1900 |
| 20CE2K2 | 14 | 2400 | – | 2172 | 2800 (1 per phs)<br>950 (3 per phs) | 5000 | 2800 (1 per phs)<br>950 (3 per phs) | 6700 | 170M6466 | 6700 | 2900 |
| | | – | 2000 | 1834 | 2300 (1 per phs)<br>800 (3 per phs) | 4200 | 2300 (1 per phs)<br>800 (3 per phs) | 5700 | 170M6466 | 5700 | 2400 |

(1) Minimum protection device size is the lowest rated device that supplies maximum protection without nuisance tripping.
(2) Maximum protection device size is the highest rated device that supplies drive protection.
(3) These fuses and disconnect are supplied with AC input NEMA/UL Type 1 drives.
(4) Inverse time breaker. Ratings shown are maximum.
(5) Maximum allowable rating by US NEC. Exact size must be chosen for each installation.
(6) Motor Circuit Protector - instantaneous trip circuit breaker. For US NEC minimum size is 125% of motor/drive FLA. Ratings shown are suggested. Instantaneous trip settings must be set to US NEC code. Not to exceed 1300% FLA.

## 690 Volt AC Input Drive Protection Devices

| Drive Catalog Number | Frame | kW Rating | | Input Ratings | Dual Element Time Delay Fuse | | Non-Time Delay Fuse | | Bussmann Style Semi-Conductor Fuse | Circuit Breaker[4] | Motor Circuit Protector[6] |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | Amps | Min.[1] | Max.[2] | Min.[3] | Max.[4] | | Max.[5] | Max. |
| 20CF170 | 9 | 160 | – | 171 | 225 | 375 | 225 | 500 | 170M3819 | 500 | 250 |
| | | – | 132 | 145 | 200 | 300 | 200 | 500 | 170M3819 | 400 | 200 |
| 20CF208 | 9 | 200 | – | 210 | 275 | 450 | 275 | 600 | 170M3819 | 600 | 300 |
| | | – | 160 | 171 | 225 | 375 | 225 | 500 | 170M3819 | 500 | 250 |
| 20CF261 | 10 | 250 | – | 263 | 350 | 575 | 350 | 775 | 170M5813 | 750 | 350 |
| | | – | 200 | 210 | 275 | 450 | 275 | 600 | 170M5813 | 600 | 300 |
| 20CF325 | 10 | 315 | – | 327 | 425 | 725 | 425 | 950 | 170M5813 | 900 | 450 |
| | | – | 250 | 263 | 350 | 575 | 350 | 775 | 170M5813 | 750 | 400 |
| 20CF385 | 10 | 355 | – | 388 | 500 | 850 | 500 | 1100 | 170M5813 | 1100 | 500 |
| | | – | 315 | 327 | 425 | 725 | 425 | 950 | 170M5813 | 900 | 450 |
| 20CF416 | 10 | 400 | – | 419 | 525 | 900 | 525 | 1200 | 170M5813 | 1200 | 550 |
| | | – | 315 | 327 | 425 | 700 | 425 | 950 | 170M5813 | 900 | 450 |
| 20CF460 | 11 | 500 | – | 463 | 600 (1 per phs)<br>300 (2 per phs) | 1000 | 600 (1 per phs)<br>300 (2 per phs) | 1300 | 170M8547 | 1300 | 600 |
| | | – | 400 | 388 | 500 (1 per phs)<br>250 (2 per phs) | 850 | 500 (1 per phs)<br>250 (2 per phs) | 1100 | 170M8547 | 1100 | 500 |
| 20CF502 | 11 | 560 | – | 506 | 650 (1 per phs)<br>325 (2 per phs) | 1100 | 650 (1 per phs)<br>325 (2 per phs) | 1500 | 170M8547 | 1500 | 650 |
| | | – | 500 | 463 | 600 (1 per phs)<br>300 (2 per phs) | 1000 | 600 (1 per phs)<br>300 (2 per phs) | 1300 | 170M8547 | 1300 | 600 |
| 20CF590 | 11 | 580 | – | 594 | 750 (1 per phs)<br>375 (2 per phs) | 1300 | 750 (1 per phs)<br>375 (2 per phs) | 1700 | 170M5813 | 1700 | 800 |
| | | – | 500 | 506 | 650 (1 per phs)<br>325 (2 per phs) | 1100 | 650 (1 per phs)<br>325 (2 per phs) | 1500 | 170M5813 | 1500 | 700 |
| 20CF650 | 12 | 630 | – | 655 | 850 (1 per phs)<br>425 (2 per phs) | 1400 | 850 (1 per phs)<br>425 (2 per phs) | 1900 | 170M5813 | 1900 | 900 |
| | | – | 560 | 594 | 750 (1 per phs)<br>375 (2 per phs) | 1300 | 750 (1 per phs)<br>375 (2 per phs) | 1700 | 170M5813 | 1700 | 800 |
| 20CF750 | 12 | 710 | – | 756 | 950 (1 per phs)<br>475 (2 per phs) | 1600 | 950 (1 per phs)<br>475 (2 per phs) | 2200 | 170M5813 | 2200 | 1000 |
| | | – | 630 | 655 | 850 (1 per phs)<br>425 (2 per phs) | 1400 | 850 (1 per phs)<br>425 (2 per phs) | 1900 | 170M5813 | 1900 | 900 |
| 20CF820 | 12 | 800 | – | 826 | 1100 (1 per phs)<br>550 (2 per phs) | 1800 | 1100 (1 per phs)<br>550 (2 per phs) | 2400 | 170M5813 | 2400 | 1100 |
| | | – | 630 | 655 | 850 (1 per phs)<br>425 (2 per phs) | 1400 | 850 (1 per phs)<br>425 (2 per phs) | 1900 | 170M5813 | 1900 | 900 |
| 20CF920 | 13 | 900 | – | 927 | 1200 (1 per phs)<br>600 (2 per phs) | 2000 | 1200 (1 per phs)<br>600 (2 per phs) | 2700 | 170M6466 [3] | 2700 | 1200 |
| | | – | 800 | 826 | 1100 (1 per phs)<br>550 (2 per phs) | 1800 | 1100 (1 per phs)<br>550 (2 per phs) | 2400 | 170M6466 [5] | 2400 | 1100 |
| 20CF1K0 | 13 | 1000 | – | 1038 | 1300 (1 per phs)<br>650 (2 per phs) | 2300 | 1300 (1 per phs)<br>650 (2 per phs) | 3000 | 170M6466 [5] | 3000 | 1300 |
| | | – | 900 | 927 | 1200 (1 per phs)<br>600 (2 per phs) | 2000 | 1200 (1 per phs)<br>600 (2 per phs) | 2700 | 170M6466 [5] | 2700 | 1200 |
| 20CF1K1 | 13 | 1100 | – | 1189 | 1500 (1 per phs)<br>750 (2 per phs) | 2600 | 1500 (1 per phs)<br>750 (2 per phs) | 3500 | 170M6466 [5] | 3500 | 1500 |
| | | – | 1000 | 1038 | 1300 (1 per phs)<br>650 (2 per phs) | 2300 | 1300 (1 per phs)<br>650 (2 per phs) | 3000 | 170M6466 [5] | 3000 | 1300 |
| 20CF1K5 | 14 | 1500 | – | 1511 | 1900 (1 per phs)<br>650 (3 per phs) | 3300 | 1900 (1 per phs)<br>650 (3 per phs) | 4500 | 170M6466 | 4500 | 1900 |
| | | – | 1300 | 1310 | 1700 (1 per phs)<br>575 (3 per phs) | 2900 | 1700 (1 per phs)<br>575 (3 per phs) | 3900 | 170M6466 | 3900 | 1700 |

| Drive Catalog Number | Frame | kW Rating | | Input Ratings | Dual Element Time Delay Fuse | | Non-Time Delay Fuse | | Bussmann Style Semi-Conductor Fuse | Circuit Breaker(4) | Motor Circuit Protector(6) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | ND | HD | Amps | Min.(1) | Max.(2) | Min.(3) | Max.(4) | | Max.(5) | Max. |
| 20CF1K9 | 14 | 1800 | – | 1914 | 2400 (1 per phs)<br>800 (3 per phs) | 4200 | 2400 (1 per phs)<br>800 (3 per phs) | 5700 | 170M6466 | 5700 | 2400 |
| | | – | 1500 | 1511 | 1900 (1 per phs)<br>650 (3 per phs) | 3200 | 1900 (1 per phs)<br>650 (3 per phs) | 4500 | 170M6466 | 4500 | 1900 |
| 20CF2K2 | 14 | 2000 | – | 2267 | 2900 (1 per phs)<br>950 (3 per phs) | 5000 | 2900 (1 per phs)<br>950 (3 per phs) | 6700 | 170M6466 | 6700 | 2900 |
| | | – | 1800 | 1914 | 2400 (1 per phs)<br>800 (3 per phs) | 4200 | 2400 (1 per phs)<br>800 (3 per phs) | 5700 | 170M6466 | 5700 | 2400 |

(1) Minimum protection device size is the lowest rated device that supplies maximum protection without nuisance tripping.
(2) Maximum protection device size is the highest rated device that supplies drive protection.
(3) These fuses and disconnect are supplied with AC input NEMA/UL Type 1 drives.
(4) Inverse time breaker. Ratings shown are maximum.
(5) Maximum allowable rating by US NEC. Exact size must be chosen for each installation.
(6) Motor Circuit Protector - instantaneous trip circuit breaker. For US NEC minimum size is 125% of motor/drive FLA. Ratings shown are suggested. Instantaneous trip settings must be set to US NEC code. Not to exceed 1300% FLA.

## 540 Volt DC Input Drive Protection Devices

| Drive Catalog Number | Frame | kW Rating | | DC Input Ratings | Fuse | Bussmann Style Fuse |
|---|---|---|---|---|---|---|
| | | ND | HD | Amps | | |
| 20CH261 | 9 | 132 | - | 307 | 500 | 170M6608 |
| | | - | 110 | 241 | 500 | 170M6608 |
| 20CH300 | 9 | 160 | - | 353 | 630 | 170M6610 |
| | | - | 132 | 288 | 630 | 170M6610 |
| 20CH385 | 10 | 200 | - | 453 | 700 | 170M6611 |
| | | - | 160 | 353 | 700 | 170M6611 |
| 20CH460 | 10 | 250 | - | 541 | 900 | 170M6613 |
| | | - | 200 | 453 | 900 | 170M6613 |
| 20CH500 | 10 | 250 | - | 589 | 500 (2 per phs) | 170M6608 |
| | | - | 250 | 494 | 500 (2 per phs) | 170M6608 |
| 20CH590 | 11 | 315 | - | 695 | 550 (2 per phs) | 170M6609 |
| | | - | 250 | 612 | 550 (2 per phs) | 170M6609 |
| 20CH650 | 11 | 355 | - | 765 | 630 (2 per phs) | 170M6610 |
| | | - | 315 | 695 | 630 (2 per phs) | 170M6610 |
| 20CH730 | 11 | 400 | - | 859 | 700 (2 per phs) | 170M6611 |
| | | - | 355 | 765 | 700 (2 per phs) | 170M6611 |
| 20CH820 | 12 | 450 | - | 965 | 700 (2 per phs) | 170M6611 |
| | | - | 400 | 859 | 700 (2 per phs) | 170M6611 |
| 20CH920 | 12 | 500 | - | 1083 | 550 (3 per phs) | 170M6609 |
| | | - | 450 | 965 | 550 (3 per phs) | 170M6609 |
| 20CH1K0 | 12 | 560 | - | 1213 | 630 (3 per phs) | 170M6610 |
| | | - | 500 | 1083 | 630 (3 per phs) | 170M6610 |
| 20CH1K1 | 13 | 630 | - | 1354 | 2400 | 170M7107 |
| | | - | 560 | 1213 | 2400 | 170M7107 |
| 20CH1K3 | 13 | 710 | - | 1530 | 2400 | 170M7107 |
| | | - | 630 | 1354 | 2400 | 170M7107 |
| 20CH1K4 | 13 | 800 | - | 1707 | 2400 | 170M7107 |
| | | - | 710 | 1413 | 2400 | 170M7107 |
| 20CH1K7 | 14 | 1000 | - | 2084 | – | 170M8610 |
| | | - | 900 | 1883 | – | 170M8610 |
| 20CH2K1 | 14 | 1200 | - | 2531 | – | 170M8610 |
| | | - | 1100 | 2284 | – | 170M8610 |
| 20CH2K7 | 14 | 1600 | - | 3178 | – | 170M8610 |
| | | - | 1300 | 2708 | – | 170M8610 |

### 650 Volt DC Input Drive Protection Devices

| Drive Catalog Number | Frame | HP Rating | | DC Input Ratings | Fuse | Bussmann Style Fuse |
|---|---|---|---|---|---|---|
| | | ND | HD | Amps | | |
| 20CJ261 | 9 | 200 | - | 294 | 500 | 170M6608 |
| | | - | 150 | 231 | 500 | 170M6608 |
| 20CJ300 | 9 | 250 | - | 338 | 630 | 170M6610 |
| | | - | 200 | 294 | 630 | 170M6610 |
| 20CJ385 | 10 | 300 | - | 434 | 700 | 170M6611 |
| | | - | 250 | 338 | 700 | 170M6611 |
| 20CJ460 | 10 | 350 | - | 519 | 900 | 170M6613 |
| | | - | 300 | 434 | 900 | 170M6613 |
| 20CJ500 | 10 | 450 | - | 564 | 500 (2 per phs) | 170M6608 |
| | | - | 350 | 474 | 500 (2 per phs) | 170M6608 |
| 20CJ590 | 11 | 500 | - | 666 | 550 (2 per phs) | 170M6609 |
| | | - | 450 | 587 | 550 (2 per phs) | 170M6609 |
| 20CJ650 | 11 | 500 | - | 733 | 630 (2 per phs) | 170M6610 |
| | | - | 500 | 666 | 630 (2 per phs) | 170M6610 |
| 20CJ730 | 11 | 600 | - | 824 | 700 (2 per phs) | 170M6611 |
| | | - | 500 | 733 | 700 (2 per phs) | 170M6611 |
| 20CJ820 | 12 | 700 | - | 925 | 700 (2 per phs) | 170M6611 |
| | | - | 600 | 824 | 700 (2 per phs) | 170M6611 |
| 20CJ920 | 12 | 800 | - | 1038 | 550 (3 per phs) | 170M6609 |
| | | - | 700 | 925 | 550 (3 per phs) | 170M6609 |
| 20CJ1K0 | 12 | 900 | - | 1162 | 630 (3 per phs) | 170M6610 |
| | | - | 800 | 1038 | 630 (3 per phs) | 170M6610 |
| 20CJ1K1 | 13 | 1000 | - | 1297 | 2400 | 170M7107 |
| | | - | 900 | 1162 | 2400 | 170M7107 |
| 20CJ1K3 | 13 | 1200 | - | 1467 | 2400 | 170M7107 |
| | | - | 1000 | 1297 | 2400 | 170M7107 |
| 20CJ1K4 | 13 | 1250 | - | 1636 | 2400 | 170M7107 |
| | | - | 1000 | 1354 | 2400 | 170M7107 |
| 20CJ1K7 | 14 | 1500 | - | 1997 | – | 170M8610 |
| | | - | 1400 | 1805 | – | 170M8610 |
| 20CJ2K1 | 14 | 1900 | - | 2425 | – | 170M8610 |
| | | - | 1700 | 2189 | – | 170M8610 |
| 20CJ2K7 | 14 | 2300 | - | 3046 | – | 170M8610 |
| | | - | 2000 | 2595 | – | 170M8610 |

### 810 Volt DC Input Drive Protection Devices

| Drive Catalog Number | Frame | HP Rating | | DC Input Ratings | Fuse | Bussmann Style Fuse |
|---|---|---|---|---|---|---|
| | | ND | HD | Amps | | |
| 20CK170 | 9 | 150 | – | 192 | 400 | 170M5608 |
| | | – | 150 | 162 | 400 | 170M5608 |
| 20CK208 | 9 | 200 | – | 235 | 450 | 170M5609 |
| | | – | 150 | 192 | 450 | 170M5609 |
| 20CK261 | 10 | 250 | – | 294 | 450 | 170M5609 |
| | | – | 200 | 235 | 450 | 170M5609 |
| 20CK325 | 10 | 350 | – | 367 | 550 | 170M6609 |
| | | – | 250 | 294 | 550 | 170M6609 |
| 20CK385 | 10 | 400 | – | 434 | 700 | 170M6611 |
| | | – | 350 | 367 | 700 | 170M6611 |
| 20CK416 | 10 | 450 | – | 469 | 800 | 170M6612 |
| | | – | 350 | 367 | 800 | 170M6612 |
| 20CK460 | 11 | 500 | – | 519 | 450 (2 per phs) | 170M5609 |
| | | – | 400 | 434 | 450 (2 per phs) | 170M5609 |
| 20CK502 | 11 | 500 | – | 566 | 500 (2 per phs) | 170M6608 |
| | | – | 500 | 519 | 500 (2 per phs) | 170M6608 |
| 20CK590 | 11 | 600 | – | 666 | 500 (2 per phs) | 170M6608 |
| | | – | 500 | 566 | 500 (2 per phs) | 170M6608 |

| Drive Catalog Number | Frame | HP Rating | | DC Input Ratings | Fuse | Bussmann Style Fuse |
|---|---|---|---|---|---|---|
| | | ND | HD | Amps | | |
| 20CK650 | 12 | 700 | – | 733 | 500 (2 per phs) | 170M6608 |
| | | – | 650 | 666 | 500 (2 per phs) | 170M6608 |
| 20CK750 | 12 | 800 | – | 846 | 630 (2 per phs) | 170M6610 |
| | | – | 700 | 733 | 630 (2 per phs) | 170M6610 |
| 20CK820 | 12 | 900 | – | 925 | 630 (2 per phs) | 170M6610 |
| | | – | 700 | 733 | 630 (2 per phs) | 170M6610 |
| 20CK920 | 13 | 1000 | – | 1038 | 2400 | 170M7107 |
| | | – | 900 | 925 | 2400 | 170M7107 |
| 20CK1K0 | 13 | 1100 | – | 1162 | 2400 | 170M7107 |
| | | – | 1000 | 1038 | 2400 | 170M7107 |
| 20CK1K1 | 13 | 1300 | – | 1331 | 2400 | 170M7107 |
| | | – | 1100 | 1162 | 2400 | 170M7107 |
| 20CK1K5 | 14 | 1600 | – | 1692 | – | 170M8610 |
| | | – | 1400 | 1467 | – | 170M8610 |
| 20CK1K9 | 14 | 2000 | – | 2143 | – | 170M8610 |
| | | – | 1600 | 1692 | – | 170M8610 |
| 20CK2K2 | 14 | 2400 | – | 2538 | – | 170M8610 |
| | | – | 2000 | 2143 | – | 170M8610 |

### 932 Volt DC Input Drive Protection Devices

| Drive Catalog Number | Frame | kW Rating | | DC Input Ratings | Fuse | Bussmann Style Fuse |
|---|---|---|---|---|---|---|
| | | ND | HD | Amps | | |
| 20CM170 | 9 | 160 | – | 200 | 315 | 170M3746 |
| | | – | 132 | 170 | 315 | 170M3746 |
| 20CM208 | 9 | 200 | – | 245 | 400 | 170M5742 |
| | | – | 160 | 200 | 400 | 170M5742 |
| 20CM261 | 10 | 250 | – | 307 | 500 | 170M5744 |
| | | – | 200 | 245 | 500 | 170M5744 |
| 20CM325 | 10 | 315 | – | 383 | 630 | 170M5746 |
| | | – | 250 | 307 | 630 | 170M5746 |
| 20CM385 | 10 | 355 | – | 453 | 700 | 170M6745 |
| | | – | 315 | 383 | 700 | 170M6745 |
| 20CM416 | 10 | 400 | – | 490 | 700 | 170M6745 |
| | | – | 315 | 383 | 700 | 170M6745 |
| 20CM460 | 11 | 450 | – | 542 | 450 (2 per phs) | 170M5743 |
| | | – | 355 | 453 | 450 (2 per phs) | 170M5743 |
| 20CM502 | 11 | 500 | – | 591 | 500 (2 per phs) | 170M5744 |
| | | – | 400 | 542 | 500 (2 per phs) | 170M5744 |
| 20CM590 | 11 | 560 | – | 695 | 500 (2 per phs) | 170M5744 |
| | | – | 500 | 591 | 500 (2 per phs) | 170M5744 |
| 20CM650 | 12 | 630 | – | 765 | 550 (2 per phs) | 170M5745 |
| | | – | 560 | 695 | 550 (2 per phs) | 170M5745 |
| 20CM750 | 12 | 710 | – | 883 | 630 (2 per phs) | 170M5746 |
| | | – | 630 | 765 | 630 (2 per phs) | 170M5746 |
| 20CM820 | 12 | 800 | – | 965 | 630 (2 per phs) | 170M5746 |
| | | – | 630 | 765 | 630 (2 per phs) | 170M5746 |
| 20CM920 | 13 | 900 | – | 1038 | 2400 | 170M7107 |
| | | – | 800 | 925 | 2400 | 170M7107 |
| 20CM1K0 | 13 | 1000 | – | 1162 | 2400 | 170M7107 |
| | | – | 900 | 1038 | 2400 | 170M7107 |
| 20CM1K1 | 13 | 1100 | – | 1331 | 2400 | 170M7107 |
| | | – | 1000 | 1162 | 2400 | 170M7107 |
| 20CM1K5 | 14 | 1500 | – | 1766 | – | 170M8610 |
| | | – | 1300 | 1530 | – | 170M8610 |
| 20CM1K9 | 14 | 1800 | – | 2237 | – | 170M8610 |
| | | – | 1500 | 1766 | – | 170M8610 |
| 20CM2K2 | 14 | 2000 | – | 2649 | – | 170M8610 |
| | | – | 1800 | 2237 | – | 170M8610 |

## *Maximum Motor Cable Lengths*

**Important:** In the following tables, A "●" in any of the latter columns will indicate that this drive rating can be used with an Allen-Bradley Terminator (1204-TFA1/1204-TFB2) and/or Reflected Wave Reduction Device with Common Mode Choke (1204-RWC-17) or without choke (1204-RWR2).

- For the Terminator, the maximum cable length is 182.9 meters (600 feet) for 400/480/600V drives (not 690V). The PWM frequency must be 2 kHz. The 1204-TFA1 can be used only on low HP (5 HP & below), while the 1204-TFB2 can be used from 2-800 HP.

- 1204 Reflected Wave Reduction Device (all motor insulation classes):
  - 1204-RWR2-09
    2 kHz: 182.9m (600 ft.) at 400/480V and 121.9m (400 ft.) at 600V.
    4 kHz: 91.4m (300 ft.) at 400/480V and 61.0m (200 ft.) at 600V.
  - 1204-RWC-17
    2 kHz: 365.8m (1200 ft.) at 400/480/600V.
    4 kHz: 243.8m (800 ft.) at 400/480V and 121.9m (400 ft.) at 600V.

For both devices, power dissipation in the damping resistor limits maximum cable length.

The 1321-RWR is a complete reflected wave reduction solution available for many of the PowerFlex drives. If available, a 1321-RWR catalog number will be indicated in the "Reactor/RWR" column. When not available, use the reactor and resistor information provided to build a solution.

| For Further Information on ... | see Publication... |
|---|---|
| 1321-RWR | 1321-TD001... |
| 1204-RWR2 | 1204-5.1 |
| 1204-RWC | 1204-IN001... |
| 1204-TFxx | 1204-IN002... |

### 400V Shielded/Unshielded Cable – *Meters (Feet)*

| Drive | | | No Solution | | | | Reactor Only | | | | Reactor + Damping Resistor or 1321-RWR | | | | Reactor/RWR | Resistor | | Available Options | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frame | kW | kHz | 1000V | 1200V | 1488V | 1600V | 1000V | 1200V | 1488V | 1600V | 1000V | 1200V | 1488V | 1600V | Cat. No. | Ohms | Watts | TFA1 | TFB2 | RWR2 | RWC |
| 9 | 132 | 2 | 24.4 (80) | 48.8 (160) | 76.2 (250) | 137.2 (450) | 24.4 (80) | 48.8 (160) | 365.8 (1200) | 365.8 (1200) | 121.9 (400) | 274.3 (900) | 365.8 (1200) | 365.8 (1200) | 1321-RWR320-DP | | | | ● | | |
| | 160 | 2 | 24.4 (80) | 48.8 (160) | 76.2 (250) | 137.2 (450) | 24.4 (80) | 48.8 (160) | 365.8 (1200) | 365.8 (1200) | 121.9 (400) | 274.3 (900) | 365.8 (1200) | 365.8 (1200) | 1321-RWR320-DP | | | | ● | | |
| 10 | 200 | 2 | 24.4 (80) | 48.8 (160) | 76.2 (250) | 121.9 (400) | 24.4 (80) | 48.8 (160) | 365.8 (1200) | 365.8 (1200) | 121.9 (400) | 274.3 (900) | 365.8 (1200) | 365.8 (1200) | 1321-3R500-B | 20 | 495 (3) | | ● | | |
| | 250 | 2 | 24.4 (80) | 48.8 (160) | 61.0 (200) | 121.9 (400) | 24.4 (80) | 48.8 (160) | 365.8 (1200) | 365.8 (1200) | 121.9 (400) | 274.3 (900) | 365.8 (1200) | 365.8 (1200) | 1321-3R500-B | 20 | 495 (3) | | ● | | |
| 11 | 315 | 2 | 18.3 (60) | 42.7 (140) | 61.0 (200) | 121.9 (400) | 18.3 (60) | 42.7 (140) | 365.8 (1200) | 365.8 (1200) | 121.9 (400) | 243.8 (800) | 365.8 (1200) | 365.8 (1200) | 1321-3R600-B | 20 | 495 (3) | | ● | | |
| | 355 | 2 | 18.3 (60) | 42.7 (140) | 61.0 (200) | 121.9 (400) | 18.3 (60) | 42.7 (140) | 304.8 (1000) | 365.8 (1200) | 121.9 (400) | 243.8 (800) | 365.8 (1200) | 365.8 (1200) | 1321-3R750-B | 20 | 495 (3) | | ● | | |
| | 400 | 2 | 18.3 (60) | 42.7 (140) | 61.0 (200) | 121.9 (400) | 18.3 (60) | 42.7 (140) | 274.3 (900) | 365.8 (1200) | 121.9 (400) | 243.8 (800) | 365.8 (1200) | 365.8 (1200) | 1321-3R750-B | 20 | 735 (4) | | ● | | |
| 12 (1) | 450 | 2 | 18.3 (60) | 42.7 (140) | 61.0 (200) | 121.9 (400) | 18.3 (60) | 42.7 (140) | 243.8 (800) | 365.8 (1200) | 121.9 (400) | 243.8 (800) | 365.8 (1200) | 365.8 (1200) | 2 x 1321-3RB400-B | 40 | 375 (4) | | ● | | |
| | 500 | 2 | 12.2 (40) | 42.7 (140) | 61.0 (200) | 121.9 (400) | 18.3 (60) | 42.7 (140) | 243.8 (800) | 365.8 (1200) | 121.9 (400) | 243.8 (800) | 365.8 (1200) | 365.8 (1200) | 2 x 1321-3R500-B | 40 | 375 (4) | | ● | | |
| | 560 | 2 | 12.2 (40) | 42.7 (140) | 61.0 (200) | 121.9 (400) | 18.3 (60) | 42.7 (140) | 243.8 (800) | 365.8 (1200) | 121.9 (400) | 243.8 (800) | 365.8 (1200) | 365.8 (1200) | 2 x 1321-3R500-B | 20 | 525 (5) | | | | |

| Drive | | | No Solution | | | | Reactor Only | | | | Reactor + Damping Resistor or 1321-RWR | | | | Reactor/RWR | Resistor | | Available Options | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frame | kW | kHz | 1000V | 1200V | 1488V | 1600V | 1000V | 1200V | 1488V | 1600V | 1000V | 1200V | 1488V | 1600V | Cat. No. | Ohms | Watts | TFA1 | TFB2 | RWR2 | RWC |
| 13 | 630[2] | 2 | 12.2 (40) | 61.0 (200) | 99.1 (325) | 167.6 (550) | 36.6 (120) | 61.0 (200) | 304.8 (1000) | 365.8 (1200) | 198.1 (650) | 274.3 (900) | 365.8 (1200) | 365.8 (1200) | 2 x 1321-3R600-B | 20 | 525[5] | | | | |
| | 710[2] | 2 | 12.2 (40) | 61.0 (200) | 99.1 (325) | 167.6 (550) | 36.6 (120) | 61.0 (200) | 304.8 (1000) | 365.8 (1200) | 198.1 (650) | 274.3 (900) | 365.8 (1200) | 365.8 (1200) | 2 x 1321-3R750-B | 20 | 525[5] | | | | |
| | 800[2] | 2 | 12.2 (40) | 61.0 (200) | 99.1 (325) | 167.6 (550) | 36.6 (120) | 61.0 (200) | 304.8 (1000) | 365.8 (1200) | 198.1 (650) | 274.3 (900) | 365.8 (1200) | 365.8 (1200) | 2 x 1321-3R750-B | 20 | 525[5] | | | | |

(1) Frame 12 drives have dual inverters and require two output reactors. The resistor ratings are per phase values for each reactor.
(2) Some Frame 13 drives require two output reactors to match drive amp rating. The resistor ratings are per phase values for each reactor.
(3) Resistor specification is based on two cables per phase.
(4) Resistor specification is based on three cables per phase.
(5) Resistor specification is based on four cables per phase.

## 480V Shielded/Unshielded Cable - *Meters (Feet)*

| Drive | | | No Solution | | | | Reactor Only | | | | Reactor + Damping Resistor or 1321-RWR | | | | Reactor/RWR | Resistor | | Available Options | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frame | HP | kHz | *1000V* | *1200V* | *1488V* | *1600V* | *1000V* | *1200V* | *1488V* | *1600V* | *1000V* | *1200V* | *1488V* | *1600V* | Cat. No. | Ohms | Watts | TFA1 | TFB2 | RWR2 | RWC |
| 9 | 200 | 2 | 12.2 (40) | 24.4 (80) | 42.7 (140) | 76.2 (250) | 12.2 (40) | 24.4 (80) | 106.9 (350) | 152.4 (500) | 61.0 (200) | 167.6 (550) | 304.8 (1000) | 365.8 (1200) | 1321-RWR320-DP | | | | ● | | |
| | 250 | 2 | 12.2 (40) | 24.4 (80) | 42.7 (140) | 76.2 (250) | 12.2 (40) | 24.4 (80) | 91.4 (300) | 121.9 (400) | 61.0 (200) | 152.4 (500) | 304.8 (1000) | 365.8 (1200) | 1321-RWR320-DP | | | | ● | | |
| 10 | 300 | 2 | 12.2 (40) | 24.4 (80) | 42.7 (140) | 76.2 (250) | 12.2 (40) | 24.4 (80) | 76.2 (250) | 91.4 (300) | 61.0 (200) | 121.9 (400) | 304.8 (1000) | 365.8 (1200) | 1321-3RB400-B | 20 | 495[3] | | ● | | |
| | 350 | 2 | 12.2 (40) | 24.4 (80) | 42.7 (140) | 76.2 (250) | 12.2 (40) | 24.4 (80) | 76.2 (250) | 91.4 (300) | 61.0 (200) | 121.9 (400) | 304.8 (1000) | 365.8 (1200) | 1321-3R500-B | 20 | 495[3] | | ● | | |
| | 450 | 2 | 12.2 (40) | 24.4 (80) | 36.6 (120) | 61.0 (200) | 12.2 (40) | 24.4 (80) | 61.0 (200) | 91.4 (300) | 61.0 (200) | 121.9 (400) | 274.3 (900) | 365.8 (1200) | 1321-3R500-B | 20 | 495[3] | | ● | | |
| 11 | 500 | 2 | 12.2 (40) | 24.4 (80) | 36.6 (120) | 61.0 (200) | 12.2 (40) | 24.4 (80) | 61.0 (200) | 91.4 (300) | 61.0 (200) | 121.9 (400) | 243.8 (800) | 365.8 (1200) | 1321-3R750-B | 20 | 495[3] | | ● | | |
| | 600 | 2 | 12.2 (40) | 24.4 (80) | 36.6 (120) | 61.0 (200) | 12.2 (40) | 24.4 (80) | 45.7 (150) | 91.4 (300) | 45.7 (150) | 121.9 (400) | 243.8 (800) | 365.8 (1200) | 1321-3R750-B | 20 | 735[4] | | ● | | |
| 12[1] | 700 | 2 | 12.2 (40) | 24.4 (80) | 36.6 (120) | 61.0 (200) | 12.2 (40) | 24.4 (80) | 45.7 (150) | 91.4 (300) | 45.7 (150) | 106.9 (350) | 243.8 (800) | 365.8 (1200) | 2 x 1321-3RB400-B | 40 | 375[4] | | ● | | |
| | 800 | 2 | 12.2 (40) | 24.4 (80) | 36.6 (120) | 61.0 (200) | 12.2 (40) | 24.4 (80) | 45.7 (150) | 91.4 (300) | 45.7 (150) | 106.9 (350) | 243.8 (800) | 365.8 (1200) | 2 x 1321-3R500-B | 40 | 375[4] | | ● | | |
| | 900 | 2 | 12.2 (40) | 24.4 (80) | 36.6 (120) | 61.0 (200) | 12.2 (40) | 24.4 (80) | 45.7 (150) | 91.4 (300) | 45.7 (150) | 106.9 (350) | 243.8 (800) | 365.8 (1200) | 2 x 1321-3R500-B | 20 | 525[5] | | | | |
| 13 | 1000[2] | 2 | 12.2 (40) | 30.5 (100) | 61.0 (200) | 121.9 (400) | 12.2 (40) | 45.7 (150) | 61.0 (200) | 121.9 (400) | 45.7 (150) | 152.4 (500) | 304.8 (1000) | 365.8 (1200) | 2 x 1321-3R600-B | 20 | 525[5] | | | | |
| | 1200[2] | 2 | 12.2 (40) | 30.5 (100) | 61.0 (200) | 121.9 (400) | 12.2 (40) | 45.7 (150) | 61.0 (200) | 121.9 (400) | 45.7 (150) | 152.4 (500) | 304.8 (1000) | 365.8 (1200) | 2 x 1321-3R750-B | 20 | 525[5] | | | | |
| | 1250[2] | 2 | 12.2 (40) | 30.5 (100) | 61.0 (200) | 121.9 (400) | 12.2 (40) | 45.7 (150) | 61.0 (200) | 121.9 (400) | 45.7 (150) | 152.4 (500) | 304.8 (1000) | 365.8 (1200) | 2 x 1321-3R750-B | 20 | 525[5] | | | | |

(1) Frame 12 drives have dual inverters and require two output reactors. The resistor ratings are per phase values for each reactor.
(2) Some Frame 13 drives require two output reactors to match drive amp rating. The resistor ratings are per phase values for each reactor.
(3) Resistor specification is based on two cables per phase.
(4) Resistor specification is based on three cables per phase.
(5) Resistor specification is based on four cables per phase.

## 600V Shielded/Unshielded Cable - *Meters (Feet)*

| Drive | | | No Solution | | Reactor Only | | Reactor + Damping Resistor or 1321-RWR | | Reactor/RWR | Resistor | | Available Options | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frame | HP | kHz | *1488V* | *1850V* | *1488V* | *1850V* | *1488V* | *1850V* | Cat. No. | Ohms | Watts | TFA1 | TFB2 | RWR2 | RWC |
| **9** | 150 | 2 | 30.5 (100) | 54.9 (180) | 36.6 (120) | 152.4 (500) | 213.4 (700) | 365.8 (1200) | 1321-RWR200-EP | | | | ● | | |
| | 200 | 2 | 30.5 (100) | 54.9 (180) | 36.6 (120) | 121.9 (400) | 182.9 (600) | 365.8 (1200) | 1321-RWR250-EP | | | | ● | | |
| **10** | 250 | 2 | 30.5 (100) | 54.9 (180) | 36.6 (120) | 91.4 (300) | 182.9 (600) | 365.8 (1200) | 1321-3RB250-B | 50 | 315 | | ● | | |
| | 350 | 2 | 30.5 (100) | 45.7 (150) | 30.5 (100) | 76.2 (250) | 167.6 (550) | 365.8 (1200) | 1321-3RB320-B | 20 | 585 (3) | | ● | | |
| | 400 | 2 | 30.5 (100) | 45.7 (150) | 30.5 (100) | 61.0 (200) | 167.6 (550) | 365.8 (1200) | 1321-3RB400-B | 20 | 585 (3) | | ● | | |
| | 450 | 2 | 30.5 (100) | 45.7 (150) | 30.5 (100) | 61.0 (200) | 152.4 (500) | 365.8 (1200) | 1321-3R500-B | 20 | 585 (3) | | ● | | |
| **11** | 500 | 2 | 30.5 (100) | 45.7 (150) | 30.5 (100) | 45.7 (150) | 152.4 (500) | 365.8 (1200) | 1321-3R500-B | 20 | 585 (3) | | ● | | |
| | 600 | 2 | 30.5 (100) | 45.7 (150) | 30.5 (100) | 45.7 (150) | 152.4 (500) | 365.8 (1200) | 1321-3R600-B | 20 | 585 (3) | | ● | | |
| **12** (1) | 700 | 2 | 30.5 (100) | 45.7 (150) | 30.5 (100) | 45.7 (150) | 152.4 (500) | 365.8 (1200) | 2 x 1321-3RB320-B | 40 | 300 (3) | | ● | | |
| | 800 | 2 | 30.5 (100) | 45.7 (150) | 30.5 (100) | 45.7 (150) | 137.2 (450) | 365.8 (1200) | 2 x 1321-3RB400-C | 40 | 480 (4) | | ● | | |
| | 900 | 2 | 30.5 (100) | 45.7 (150) | 30.5 (100) | 45.7 (150) | 121.9 (400) | 365.8 (1200) | 2 x 1321-3R400-B | 40 | 480 (4) | | | | |
| **13** | 1000 | 2 | 42.7 (140) | 152.4 (500) | 61.0 (200) | 304.8 (1000) | 365.8 (1200) | 365.8 (1200) | 1321-3R1000-C | 20 | 960 (4) | | | | |
| | 1100 | 2 | 42.7 (140) | 152.4 (500) | 61.0 (200) | 304.8 (1000) | 365.8 (1200) | 365.8 (1200) | 1321-3R1000-B | 10 | 1440 (5) | | | | |
| | 1300 (2) | 2 | 42.7 (140) | 152.4 (500) | 61.0 (200) | 304.8 (1000) | 365.8 (1200) | 365.8 (1200) | 2 x 1321-3R600-B | 20 | 720 (5) | | | | |

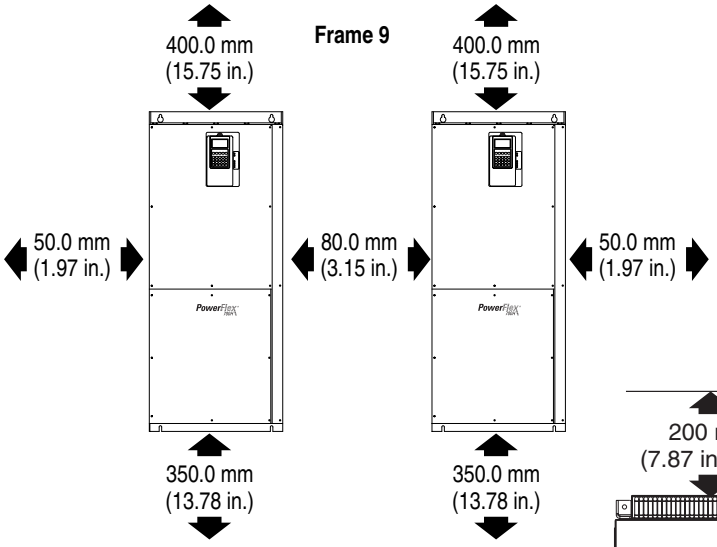
(1) Frame 12 drives have dual inverters and require two output reactors. The resistor ratings are per phase values for each reactor.
(2) Some Frame 13 drives require two output reactors to match drive amp rating. The resistor ratings are per phase values for each reactor.
(3) Resistor specification is based on two cables per phase.
(4) Resistor specification is based on three cables per phase.
(5) Resistor specification is based on four cables per phase.

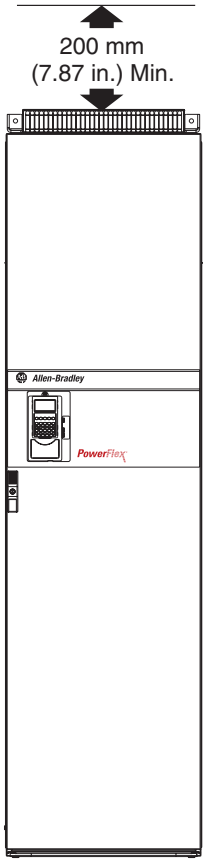
## 690V Shielded/Unshielded Cable – *Meters (Feet)*

| Drive | | | No Solution | | Reactor Only | | Reactor + Damping Resistor | | Reactor | Resistor | | Available Options | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frame | kW | kHz | *1850V* | *2000V* | *1850V* | *2000V* | *1850V* | *2000V* | Cat. No. | Ohms | Watts | TFA1 | TFB2 | RWR2 | RWC |
| **9** | 160 | 2 | 15.2 (50) | 30.5 (100) | 15.2 (50) | 30.5 (100) | 243.8 (800) | 304.8 (1000) | 1321-3RB250-C | 50 | 480 | | | | |
| | 200 | 2 | 15.2 (50) | 30.5 (100) | 15.2 (50) | 30.5 (100) | 243.8 (800) | 304.8 (1000) | 1321-3RB250-C | 50 | 480 | | | | |
| **10** | 250 | 2 | 15.2 (50) | 30.5 (100) | 15.2 (50) | 30.5 (100) | 243.8 (800) | 304.8 (1000) | 1321-3RB320-C | 50 | 480 | | | | |
| | 315 | 2 | 15.2 (50) | 30.5 (100) | 15.2 (50) | 30.5 (100) | 213.4 (700) | 304.8 (1000) | 1321-3RB400-C | 20 | 945 (3) | | | | |
| | 355 | 2 | 15.2 (50) | 30.5 (100) | 15.2 (50) | 30.5 (100) | 213.4 (700) | 304.8 (1000) | 1321-3R500-C | 20 | 945 (3) | | | | |
| | 400 | 2 | 15.2 (50) | 30.5 (100) | 15.2 (50) | 30.5 (100) | 213.4 (700) | 304.8 (1000) | 1321-3R500-C | 20 | 945 (3) | | | | |
| **11** | 450 | 2 | 15.2 (50) | 30.5 (100) | 15.2 (50) | 30.5 (100) | 213.4 (700) | 304.8 (1000) | 1321-3R600-C | 20 | 945 (3) | | | | |
| | 500 | 2 | 15.2 (50) | 30.5 (100) | 15.2 (50) | 30.5 (100) | 213.4 (700) | 304.8 (1000) | 1321-3R600-C | 20 | 945 (3) | | | | |
| | 560 | 2 | 15.2 (50) | 30.5 (100) | 15.2 (50) | 30.5 (100) | 182.9 (600) | 304.8 (1000) | 1321-3R750-C | 20 | 945 (3) | | | | |
| **12** (1) | 630 | 2 | 15.2 (50) | 30.5 (100) | 15.2 (50) | 30.5 (100) | 182.9 (600) | 304.8 (1000) | 2 x1321-3RB400-C | 40 | 480 (3) | | | | |
| | 710 | 2 | 15.2 (50) | 30.5 (100) | 15.2 (50) | 30.5 (100) | 182.9 (600) | 304.8 (1000) | 2 x1321-3R500-C | 40 | 645 (4) | | | | |
| | 800 | 2 | 15.2 (50) | 30.5 (100) | 15.2 (50) | 30.5 (100) | 182.9 (600) | 304.8 (1000) | 2 x1321-3R500-C | 40 | 645 (4) | | | | |
| **13** | 900 (2) | 2 | 30.5 (100) | 68.6 (225) | 61.0 (200) | 91.4 (300) | 243.8 (800) | 304.8 (1000) | 2 x1321-3R600-C | 40 | 645 (4) | | | | |
| | 1000 (2) | 2 | 30.5 (100) | 68.6 (225) | 48.8 (160) | 91.4 (300) | 243.8 (800) | 304.8 (1000) | 2 x1321-3R600-C | 20 | 840 (5) | | | | |
| | 1100 (2) | 2 | 30.5 (100) | 68.6 (225) | 48.8 (160) | 91.4 (300) | 243.8 (800) | 304.8 (1000) | 2 x1321-3R750-C | 20 | 840 (5) | | | | |

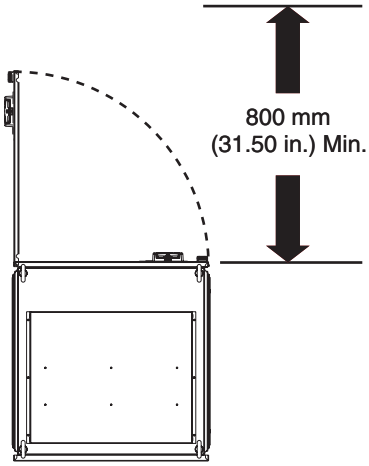
(1) Frame 12 drives have dual inverters and require two output reactors. The resistor ratings are per phase values for each reactor.
(2) Some Frame 13 drives require two output reactors to match drive amp rating. The resistor ratings are per phase values for each reactor.
(3) Resistor specification is based on two cables per phase.
(4) Resistor specification is based on three cables per phase.
(5) Resistor specification is based on four cables per phase.

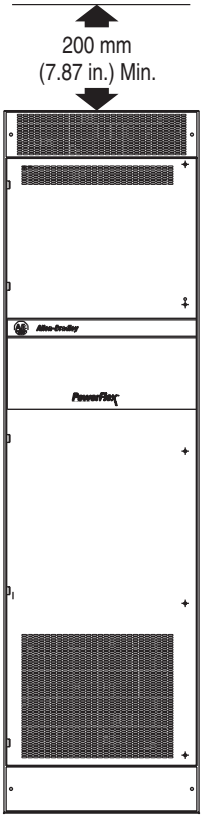
## *Minimum Mounting Clearances*



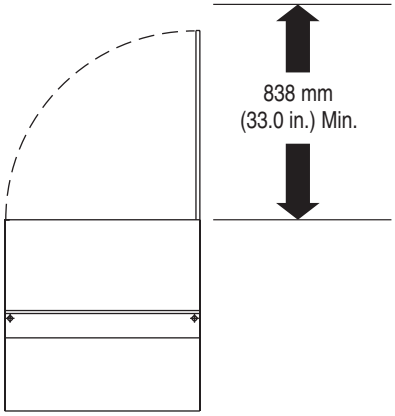




**Frames 10 - 14 (NEMA/UL Type 1 - IP21 Enclosure (Frame 10 shown)**




**Frames 10 - 12 (NEMA/UL Type 1 - IP20 MCC Enclosure (Frame 10 shown)**



## *Parameter Cross Reference*

### How Parameters are Organized

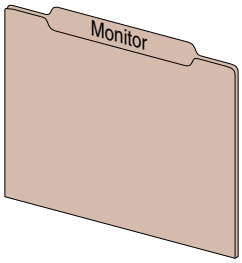
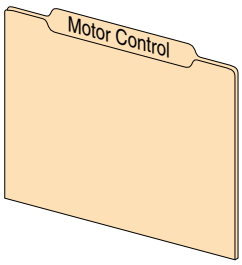
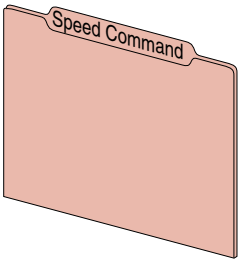
The LCD HIM displays parameters in a **File-Group-Parameter** or **Numbered List** view order. To switch display mode, access the Main Menu, press ALT, then Sel while cursor is on the parameter selection. In addition, using [Parm Access Lvl], the user has the option to display *all* parameters, commonly used parameters or diagnostic parameters.

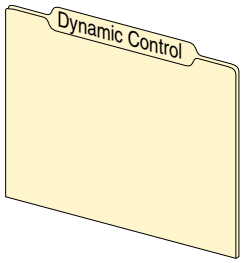
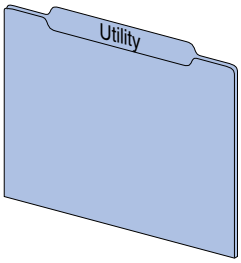
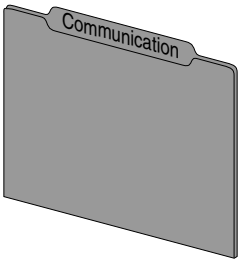
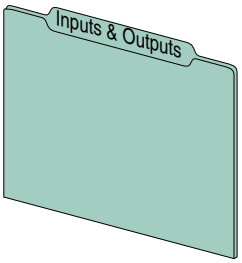
#### File-Group-Parameter Order

This simplifies programming by grouping parameters that are used for similar functions. The parameters are organized into 6 files in Basic Parameter view or 7 files in Advanced Parameter view. Each file is divided into groups, and each parameter is an element in a group. By default, the LCD HIM displays parameters by File-Group-Parameter view.

#### Numbered List View

All parameters are in numerical order.

| File | Group | Parameters | | | | | |
|---|---|---|---|---|---|---|---|
| **Monitor**   | Metering | Output Freq | 001 | Output Power | 007 | DC Bus Memory | 013 |
| | | Commanded Speed | 002 | Output Powr Fctr | 008 | Analog In1 Value | 016 |
| | | Output Current | 003 | Elapsed MWh | 009 | Analog In2 Value | 017 |
| | | Torque Current | 004 | Elapsed Run Time | 010 | Ramped Speed | 022 |
| | | Flux Current | 005 | MOP Reference | 011 | Speed Reference | 023 |
| | | Output Voltage | 006 | DC Bus Voltage | 012 | Speed Feedback | 025 |
| | Drive Data | Rated kW | 026 | Rated Amps | 028 | Control SW Ver | 029 |
| | | Rated Volts | 027 | | | | |
| **Motor Control**   | Motor Data | Motor Type | 040 | Motor NP RPM | 044 | Motor OL Factor | 048 |
| | | Motor NP Volts | 041 | Motor NP Power | 045 | Motor Poles | 049 |
| | | Motor NP FLA | 042 | Mtr NP Pwr Units | 046 | Motor OL Mode | 050 |
| | | Motor NP Hertz | 043 | Motor OL Hertz | 047 | | |
| | Torq Attributes | Motor Cntl Sel | 053 | Flux Up Mode | 057 | Autotune | 061 |
| | | Maximum Freq | 055 | Flux Up Time | 058 | IR Voltage Drop | 062 |
| | | Compensation | 056 | SV Boost Filter | 059 | Flux Current Ref | 063 |
| | Volts per Hertz | Start/Acc Boost | 069 | Break Voltage | 071 | Break Frequency | 072 |
| **Speed Command**   | Spd Mode/Limits | Speed Units | 079 | Overspeed Limit | 083 | Skip Freq Band | 087 |
| | | Feedback Select | 080 | Skip Frequency 1 | 084 | Speed/Torque Mod | 088 |
| | | Minimum Speed | 081 | Skip Frequency 2 | 085 | Rev Speed Limit | 454 |
| | | Maximum Speed | 082 | Skip Frequency 3 | 086 | | |
| | Speed References | Speed Ref A Sel | 090 | Speed Ref B Hi | 094 | TB Man Ref Sel | 096 |
| | | Speed Ref A Hi | 091 | Speed Ref B Lo | 095 | TB Man Ref Hi | 097 |
| | | Speed Ref A Lo | 092 | Speed Ref B Sel | 093 | TB Man Ref Lo | 098 |
| | Discrete Speeds | Jog Speed 1 | 100 | Preset Speed 1-7 | 101-107 | Jog Speed 2 | 108 |
| | Speed Trim | Trim % Setpoint | 116 | Trim Out Select | 118 | Trim Lo | 120 |
| | | Trim In Select | 117 | Trim Hi | 119 | | |
| | Slip Comp | Slip RPM @ FLA | 121 | Slip RPM Meter | 123 | | |
| | Process PI | PI Configuration | 124 | PI Lower Limit | 131 | PI Output Meter | 138 |
| | | PI Control | 125 | PI Upper Limit | 132 | PI Reference Hi | 460 |
| | | PI Reference Sel | 126 | PI Preload | 133 | PI Reference Lo | 461 |
| | | PI Setpoint | 127 | PI Status | 134 | PI Feedback Hi | 462 |
| | | PI Feedback Sel | 128 | PI Ref Meter | 135 | PI Feedback Lo | 463 |
| | | PI Integral Time | 129 | PI Fdback Meter | 136 | PI Output Gain | 464 |
| | | PI Prop Gain | 130 | PI Error Meter | 137 | | |

| File | Group | Parameters | | | | | |
|---|---|---|---|---|---|---|---|
| **Dynamic Control**   | Ramp Rates | Accel Time 1, 2 | 140,141 | Decel Time 1, 2 | 142,143 | S Curve % | 146 |
| | Load Limits | Current Lmt Sel<br>Current Lmt Val | 147<br>148 | Current Lmt Gain<br>Drive OL Mode | 149<br>150 | PWM Frequency<br>Droop RPM @ FLA | 151<br>152 |
| | Stop/Brake Modes | DB While Stopped<br>Stop/BRK Mode A<br>Stop/BRK Mode B<br>DC Brk Lvl Sel | 145<br>155<br>156<br>157 | DC Brake Level<br>DC Brake Time<br>Bus Reg Ki<br>Bus Reg Mode A | 158<br>159<br>160<br>161 | Bus Reg Mode B<br>DB Resistor Type<br>Bus Reg Kp<br>Bus Reg Kd | 162<br>163<br>164<br>165 |
| | Restart Modes | Start At PowerUp<br>Flying Start En<br>Auto Rstrt Tries<br>Auto Rstrt Delay | 168<br>169<br>174<br>175 | Sleep Wake Mode<br>Sleep Wake Ref<br>Wake Level<br>Wake Time | 178<br>179<br>180<br>181 | Sleep Level<br>Sleep Time<br>Powerup Delay | 182<br>183<br>167 |
| | Power Loss | Power Loss Mode<br>Power Loss Time | 184<br>185 | Power Loss Volts | 186 | Shear Pin Time | 189 |
| **Utility**   | Direction Config | Direction Mode | 190 | | | | |
| | HIM Ref Config | Save HIM Ref | 192 | Man Ref Preload | 193 | | |
| | MOP Config | Save MOP Ref | 194 | MOP Rate | 195 | | |
| | Drive Memory | Param Access Lvl<br>Reset To Defalts<br>Load Frm Usr Set | 196<br>197<br>198 | Save To User Set<br>Reset Meters<br>Language | 199<br>200<br>201 | Drive Checksum | 203 |
| | Diagnostics | Drive Status 1, 2<br>Drive Alarm 1, 2<br>Speed Ref Source<br>Start Inhibits<br>Last Stop Source | 209,210<br>211,212<br>213<br>214<br>215 | Dig In Status<br>Dig Out Status<br>Drive Temp<br>Motor OL Count<br>Fault Frequency | 216<br>217<br>218<br>220<br>224 | Fault Amps<br>Fault Bus Volts<br>Status 1,2 @ Fault<br>Alarm 1,2 @ Fault | 225<br>226<br>227,228<br>229,230 |
| | Faults | Fault Config 1<br>Fault Clear | 238<br>240 | Fault Clear Mode<br>Power Up Marker | 241<br>242 | Fault 1-8 Code<br>Fault 1-8 Time | 243-257<br>244-258 |
| | Alarms | Alarm Config 1 | 259 | Alarm Clear | 261 | Alarm1-8 Code | 262-269 |
| **Communication**   | Comm Control | Drive Logic Rslt<br>Drive Ref Rslt | 271<br>272 | Drive Ramp Rslt<br>DPI Port Sel | 273<br>274 | DPI Port Value | 275 |
| | Masks/Owners | Logic Mask<br>Start Mask<br>Jog Mask<br>Direction Mask<br>Reference Mask<br>Accel Mask<br>Decel Mask | 276<br>277<br>278<br>279<br>280<br>281<br>282 | Fault Clr Mask<br>MOP Mask<br>Local Mask<br>Stop Owner<br>Start Owner<br>Jog Owner<br>Direction Owner | 283<br>284<br>285<br>288<br>289<br>290<br>291 | Reference Owner<br>Accel Owner<br>Decel Owner<br>Fault Clr Owner<br>MOP Owner<br>Local Owner | 292<br>293<br>294<br>295<br>296<br>297 |
| | Datalinks | Data In A1-D2 | 300-307 | Data Out A1-D2 | 310-317 | | |
| **Inputs/Outputs**   | Analog Inputs | Anlg In Config<br>Anlg In Sqr Root | 320<br>321 | Analog In1, 2 Hi<br>Analog In1, 2 Lo | 322,325<br>323,326 | Analog In1, 2 Loss | 324,327 |
| | Analog Outputs | Anlg Out Config<br>Anlg Out Absolut<br>Analog Out1, 2 Sel | 340<br>341<br>342,345 | Analog Out1, 2 Hi<br>Analog Out1, 2 Lo | 343,346<br>344,347 | Anlg Out1,2 Scal<br>Anlg1,2 Out Setpt | 354,355<br>377,378 |
| | Digital Inputs | 20C-DG1 Remove | 358 | 20C-DG1 Status | 359 | Digital In1-6 Sel | 361-366 |
| | Digital Outputs | Dig Out Setpt<br>Digital Out1 Sel<br>Dig Out1 Level<br>Dig Out1 OnTime<br>Dig Out1 OffTime | 379<br>380<br>381<br>382<br>383 | Digital Out2 Sel<br>Dig Out2 Level<br>Dig Out2 OnTime<br>Dig Out2 OffTime | 384<br>385<br>386<br>387 | Digital Out3 Sel<br>Dig Out3 Level<br>Dig Out3 OnTime<br>Dig Out3 OffTime | 388<br>389<br>390<br>391 |

## Frame to AC Drive Rating Cross Reference

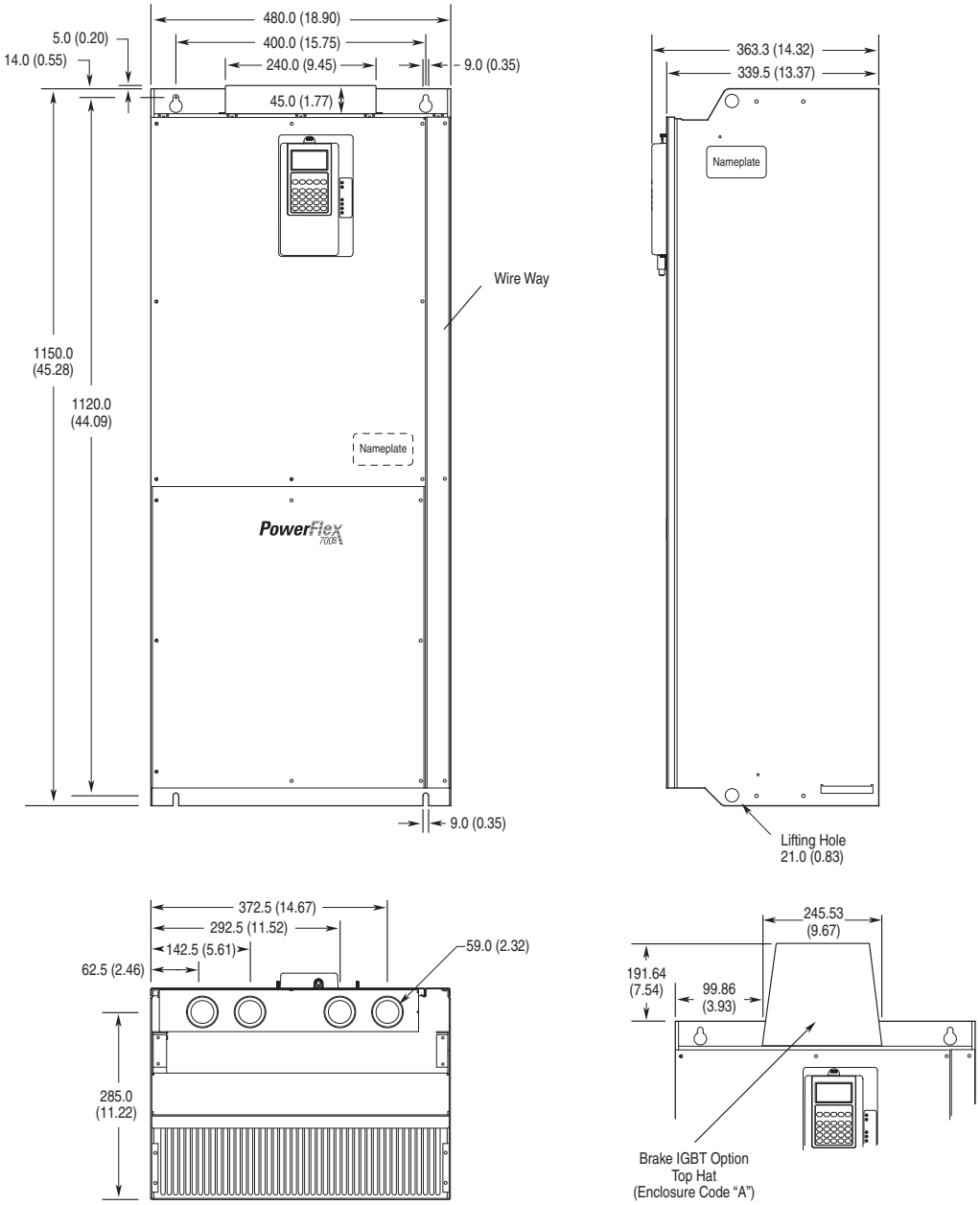
| | 208 | | 240 | | 400V | | 480V | | 600V | | 690V | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Frame | ND kW | HD kW | ND HP | HD HP | ND kW | HD kW | ND HP | HD HP | ND HP | HD HP | ND kW | HD kW |
| 9 | – | – | – | – | 132 | 110 | 200 | 150 | 150 | 150 | 160 | 132 |
| | – | – | – | – | 160 | 132 | 250 | 200 | 200 | 150 | 200 | 160 |
| 10 | – | – | – | – | 200 | 160 | 300 | 250 | 250 | 200 | 250 | 200 |
| | – | – | – | – | 250 | 200 | 350 | 300 | 350 | 250 | 315 | 250 |
| | – | – | – | – | 250 | 250 | 450 | 350 | 400 | 350 | 355 | 315 |
| | – | – | – | – | – | – | – | – | 450 | 350 | 400 | 315 |
| 11 | – | – | – | – | 315 | 250 | 500 | 450 | 500 | 400 | 450 | 355 |
| | – | – | – | – | 355 | 315 | 500 | 500 | 500 | 500 | 500 | 400 |
| | – | – | – | – | 400 | 355 | 600 | 500 | 600 | 500 | 560 | 500 |
| 12 | – | – | – | – | 450 | 400 | 700 | 600 | 700 | 650 | 630 | 560 |
| | – | – | – | – | 500 | 450 | 800 | 700 | 800 | 700 | 710 | 630 |
| | – | – | – | – | 560 | 500 | 900 | 800 | 900 | 700 | 800 | 630 |
| 13 | – | – | – | – | 630 | 560 | 1000 | 900 | 1000 | 900 | 900 | 800 |
| | – | – | – | – | 710 | 630 | 1200 | 1000 | 1100 | 1000 | 1000 | 900 |
| | – | – | – | – | 800 | 710 | 1250 | 1000 | 1300 | 1100 | 1100 | 1000 |
| 14 | – | – | – | – | 1000 | 900 | 1500 | 1400 | 1600 | 1400 | 1500 | 1300 |
| | – | – | – | – | 1200 | 1100 | 1900 | 1700 | 2000 | 1600 | 1800 | 1500 |
| | – | – | – | – | 1600 | 1300 | 2300 | 2000 | 2400 | 2000 | 2000 | 1800 |

## Frame to DC Drive Rating Cross Reference

| | 325V | | 540V | | 650V | | 810V | | 932V | |
|---|---|---|---|---|---|---|---|---|---|---|
| Frame | ND HP | HD HP | ND kW | HD kW | ND HP | HD HP | ND HP | HD HP | ND kW | HD kW |
| 9 | – | – | 132 | 110 | 200 | 150 | 150 | 150 | 160 | 132 |
| | – | – | 160 | 132 | 250 | 200 | 200 | 150 | 200 | 160 |
| 10 | – | – | 200 | 160 | 300 | 250 | 250 | 200 | 250 | 200 |
| | – | – | 250 | 200 | 350 | 300 | 350 | 250 | 315 | 250 |
| | – | – | 250 | 250 | 450 | 350 | 400 | 350 | 355 | 315 |
| | – | – | – | – | – | – | 450 | 350 | 400 | 315 |
| 11 | – | – | 315 | 250 | 500 | 450 | 500 | 400 | 450 | 355 |
| | – | – | 355 | 315 | 500 | 500 | 500 | 500 | 500 | 400 |
| | – | – | 400 | 355 | 600 | 500 | 600 | 500 | 560 | 500 |
| 12 | – | – | 450 | 400 | 700 | 600 | 700 | 650 | 630 | 560 |
| | – | – | 500 | 450 | 800 | 700 | 800 | 700 | 710 | 630 |
| | – | – | 560 | 500 | 900 | 800 | 900 | 700 | 800 | 630 |
| 13 | – | – | 630 | 560 | 1000 | 900 | 1000 | 900 | 1000 | 900 |
| | – | – | 710 | 630 | 1200 | 1000 | 1100 | 1000 | 1100 | 1000 |
| | – | – | 800 | 710 | 1250 | 1000 | 1300 | 1100 | 1300 | 1100 |
| 14 | – | – | 1000 | 900 | 1500 | 1400 | 1600 | 1400 | 1500 | 1300 |
| | – | – | 1200 | 1100 | 1900 | 1700 | 2000 | 1600 | 1800 | 1500 |
| | – | – | 1600 | 1300 | 2300 | 2000 | 2400 | 2000 | 2000 | 1800 |

## *Approximate Dimensions*

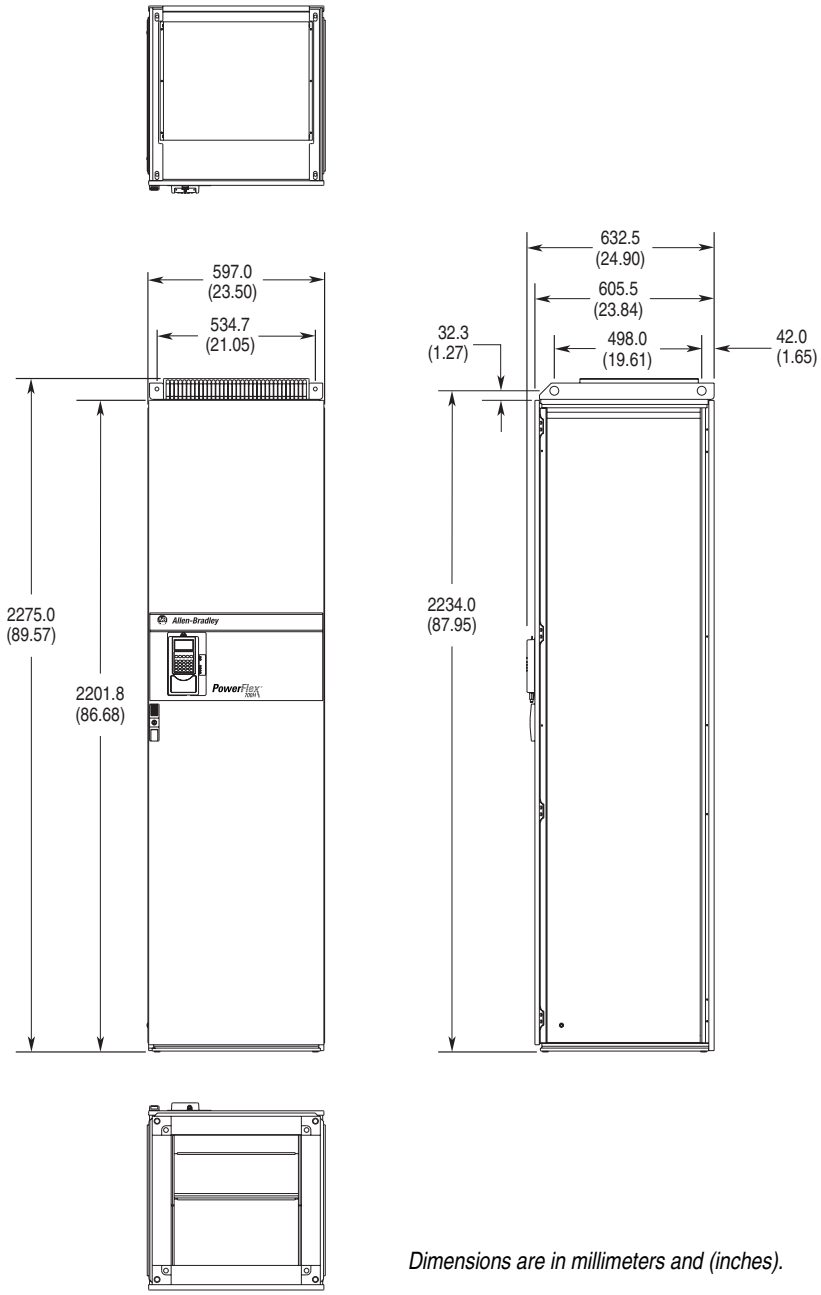
### Frame 9 Dimensions




*Dimensions are in millimeters and (inches).*

| Type | Weight kg (lbs.) |
|---|---|
| 400V/480V AC, 261 Amp Drive & Enclosure | 143 (315) |
| 400V/480V AC, 300 Amp Drive & Enclosure | 151 (333) |
| 540/650V DC, 261 Amp Drive & Enclosure | 109 (240) |
| 540/650V DC, 300 Amp Drive & Enclosure | 117 (257) |
| 600/690V AC Drive & Enclosure | 143 (315) |
| 810/932V DC Drive & Enclosure | 109 (240) |

### Frame 10 Dimensions, NEMA 1 IP21, Enclosure Code "A"

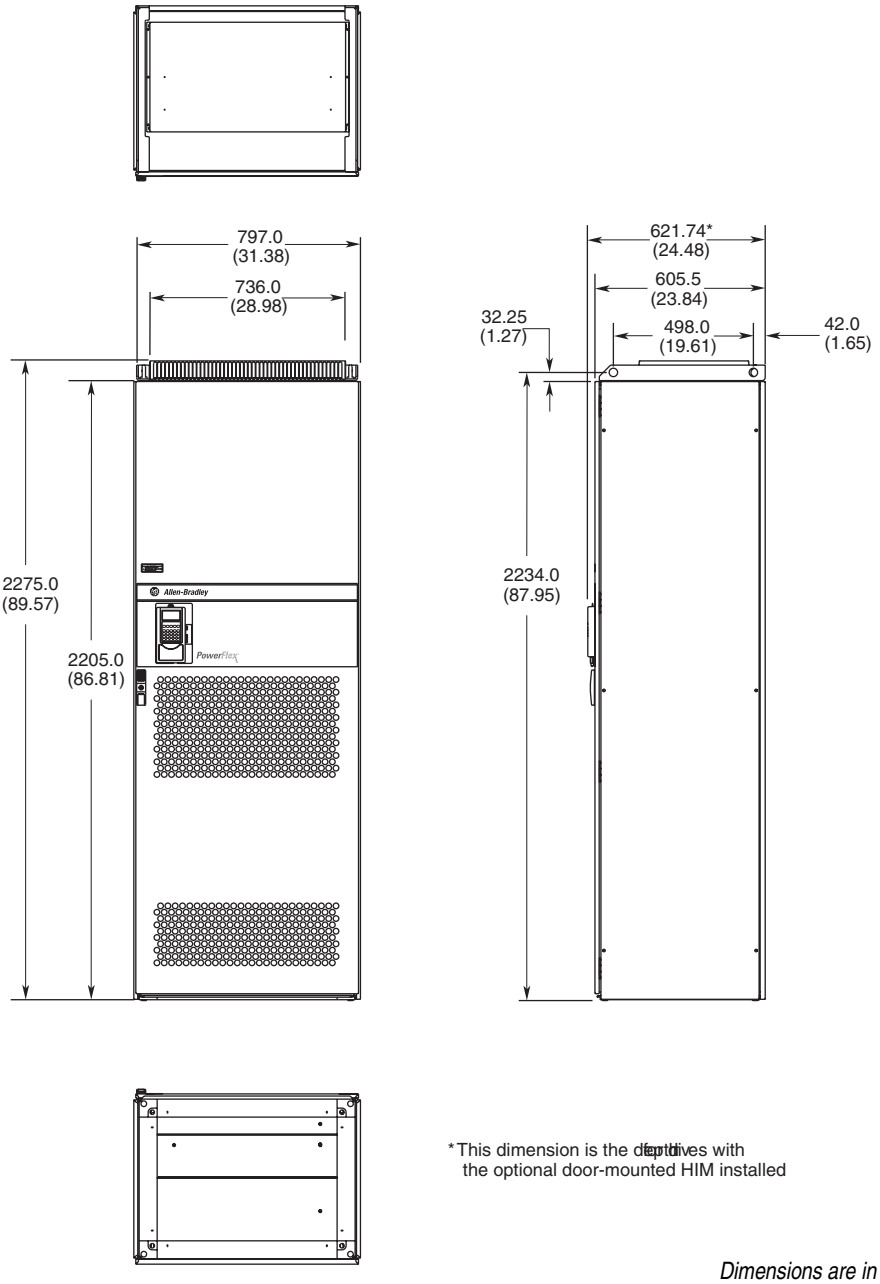



*Dimensions are in millimeters and (inches).*

**Note**: Refer to the *PowerFlex 700H and 700S Frame 9-14 Drives Installation Instructions*, publication PFLEX-IN006 …, for additional Frame 10 enclosure style dimensions.

| Voltage Class | Drive Rating Amps | Approx. Weight kg (lbs.) Drive & Enclosure (AC Input) | Approx. Weight kg (lbs.) Drive & Enclosure (DC Input) |
|---|---|---|---|
| 400/480V AC (540/650V DC) | 385 | 432 (952) | 317 (699) |
| | 460 | 432 (952) | 317 (699) |
| | 520 | 432 (952) | 317 (699) |
| 600/690V AC (810/932V DC) | 261 | 370 (816) | 317 (699) |
| | 325 | 401 (884) | 317 (699) |
| | 385 | 401 (884) | 317 (699) |
| | 416 | 401 (884) | 317 (699) |

### Frame 11 Dimensions, NEMA 1 IP21, Enclosure Code "A"



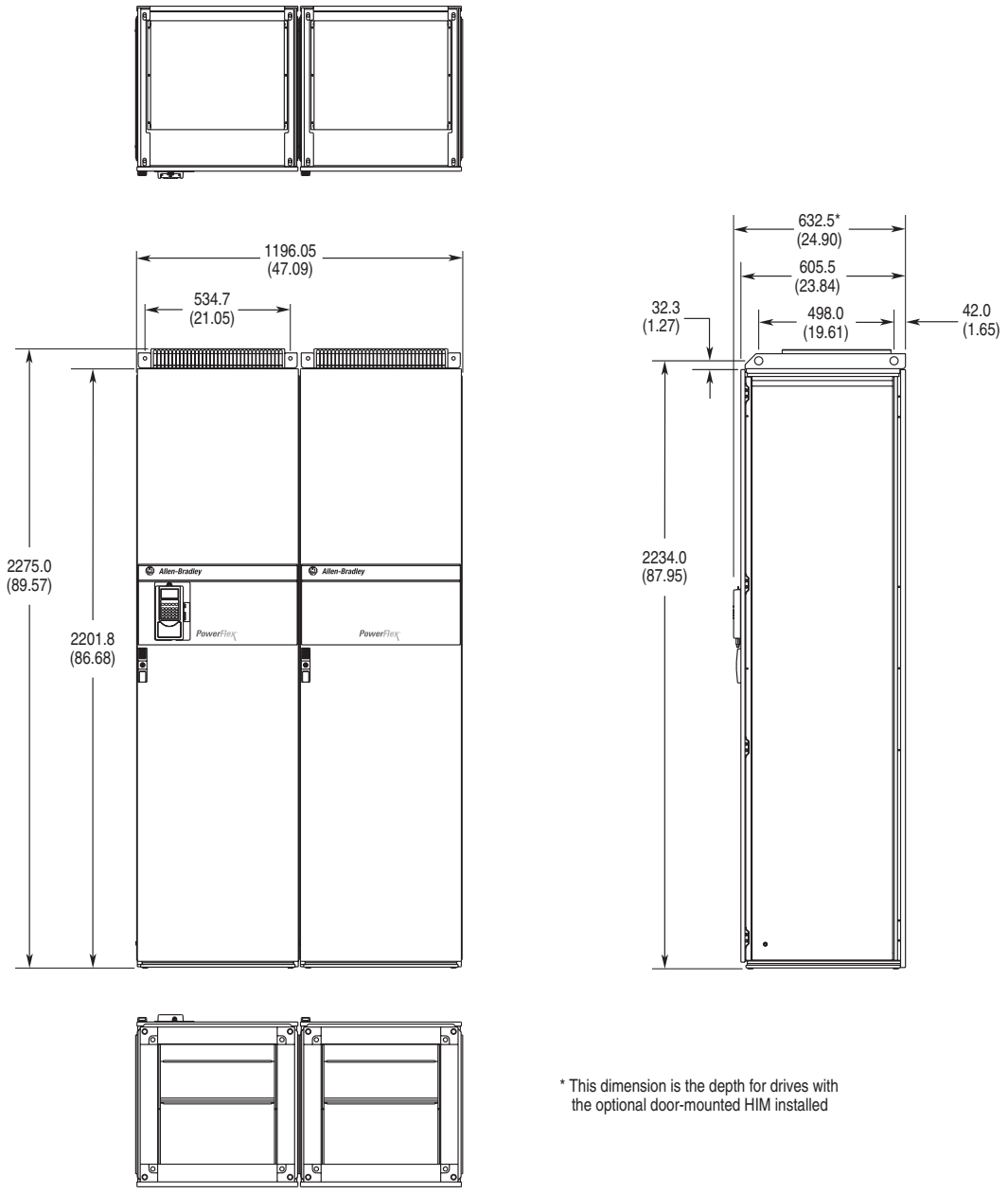

*This dimension is the depth of drives with the optional door-mounted HIM installed

*Dimensions are in millimeters and (inches).*

**Note**: Refer to the *PowerFlex 700H and 700S Frame 9-14 Drives Installation Instructions*, publication PFLEX-IN006 …, for additional Frame 11 enclosure style dimensions.

| Voltage Class | Drive Rating Amps | Approx. Weight kg (lbs.) Drive & Enclosure (AC Input) | Approx. Weight kg (lbs.) Drive & Enclosure (DC Input) |
|---|---|---|---|
| 400/480V AC (540/650V DC) | 590 | 614 (1354) | 446 (983) |
| | 650 | 614 (1354) | 446 (983) |
| | 730 | 614 (1354) | 446 (983) |
| 600/690V AC (810/932V DC) | 460 | 561 (1237) | 446 (983) |
| | 502 | 561 (1237) | 446 (983) |
| | 590 | 676 (1490) | 446 (983) |

### Frame 12 Dimensions, NEMA 1 IP21, Enclosure Code "A"




* This dimension is the depth for drives with the optional door-mounted HIM installed

*Dimensions are in millimeters and (inches).*

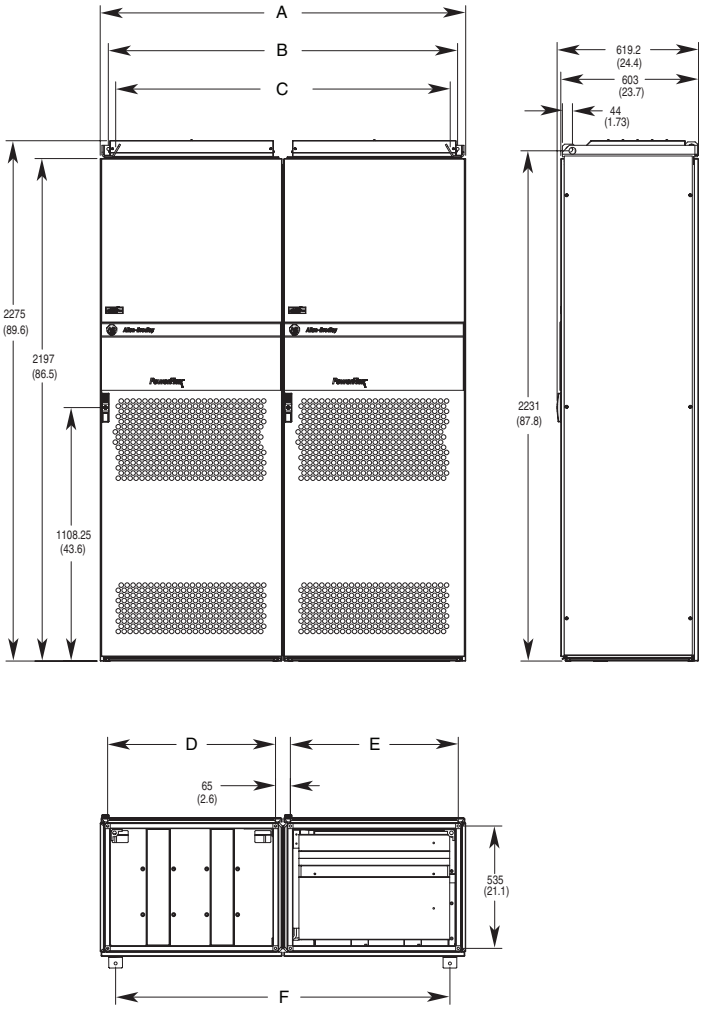
**Note**: Refer to the *PowerFlex 700H and 700S Frame 9-14 Drives Installation Instructions*, publication PFLEX-IN006 …, for additional Frame 12 enclosure style dimensions.

| Voltage Class | Drive Rating Amps | Approx. Weight kg (lbs.) Drive & Enclosure (AC Input) | Approx. Weight kg (lbs.) Drive & Enclosure (DC Input) |
|---|---|---|---|
| 400/480V AC (540/650V DC) | 820 | 864 (1906) | 634 (1398) |
| | 920 | 864 (1906) | 634 (1398) |
| | 1030 | 864 (1906) | 634 (1398) |
| 600/690V AC (810/932V DC) | 650 | 802 (1768) | 634 (1398) |
| | 750 | 802 (1768) | 634 (1398) |
| | 820 | 802 (1768) | 634 (1398) |

## Frame 13 - Dimensions

| Voltage Class | Amps | A | B | C | D | E | F |
|---|---|---|---|---|---|---|---|
| 400/480V AC (540/650V DC) | 1150 | 1412 (56) | 1329 (52) | 1264 (50) | 535 (21) | 735 (29) | 1264 (58) |
| | 1300 | 1600 (63) | 1529 (60) | 1464 (58) | 735 (29) | 735 (29) | 1464 (58) |
| | 1450 | | | | | | |
| 600/690V AC (810/932V DC) | 920 | 1412 (56) | 1329 (52) | 1264 (50) | 535 (21) | 735 (29) | 1264 (50) |
| | 1030 | | | | | | |
| | 1180 | | | | | | |

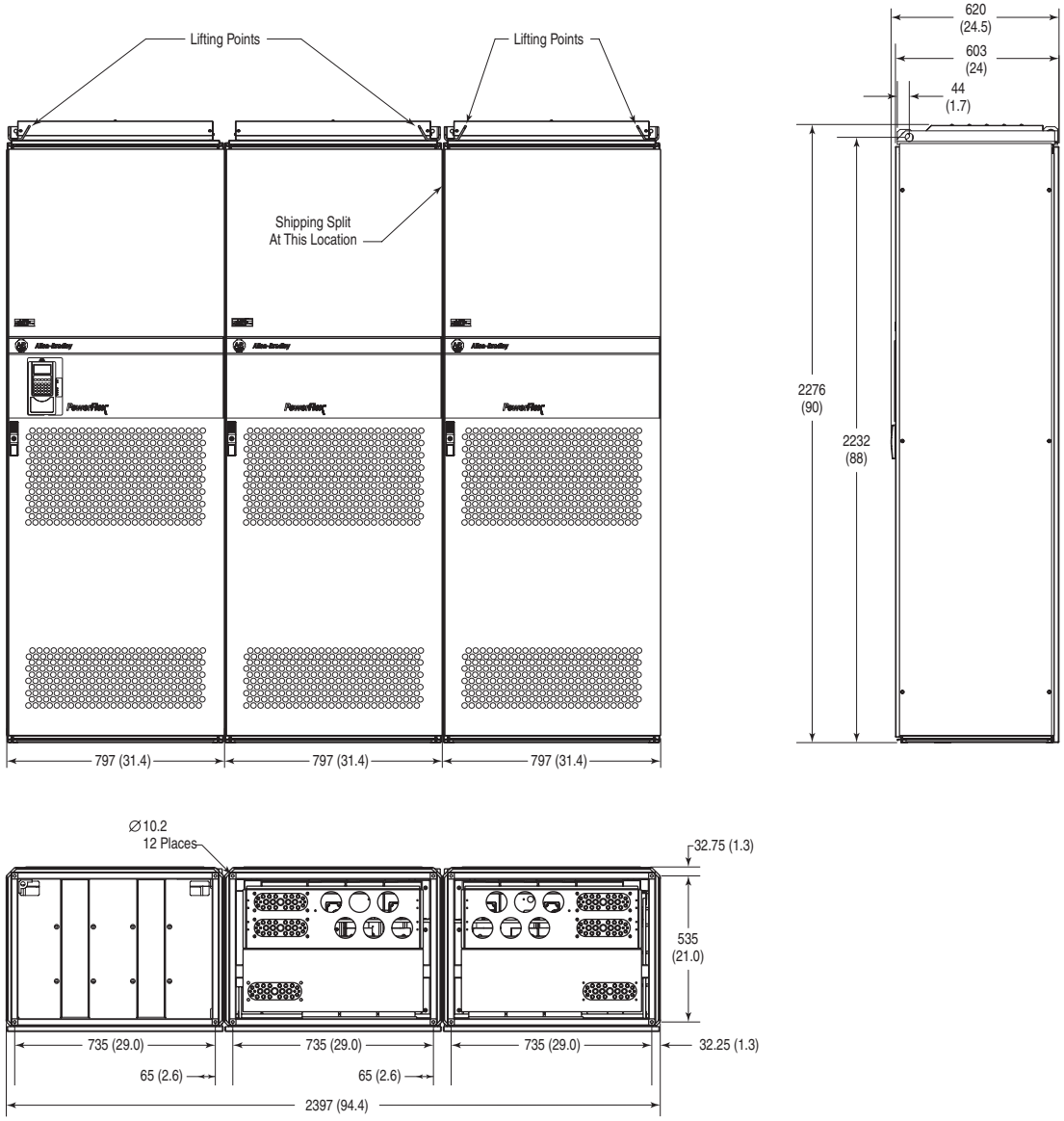
Dimensions are in mm and (in.)




**Note**: Refer to the *PowerFlex 700H and 700S Frame 9-14 Drives Installation Instructions*, publication PFLEX-IN006 …, for additional Frame 13 enclosure style dimensions.

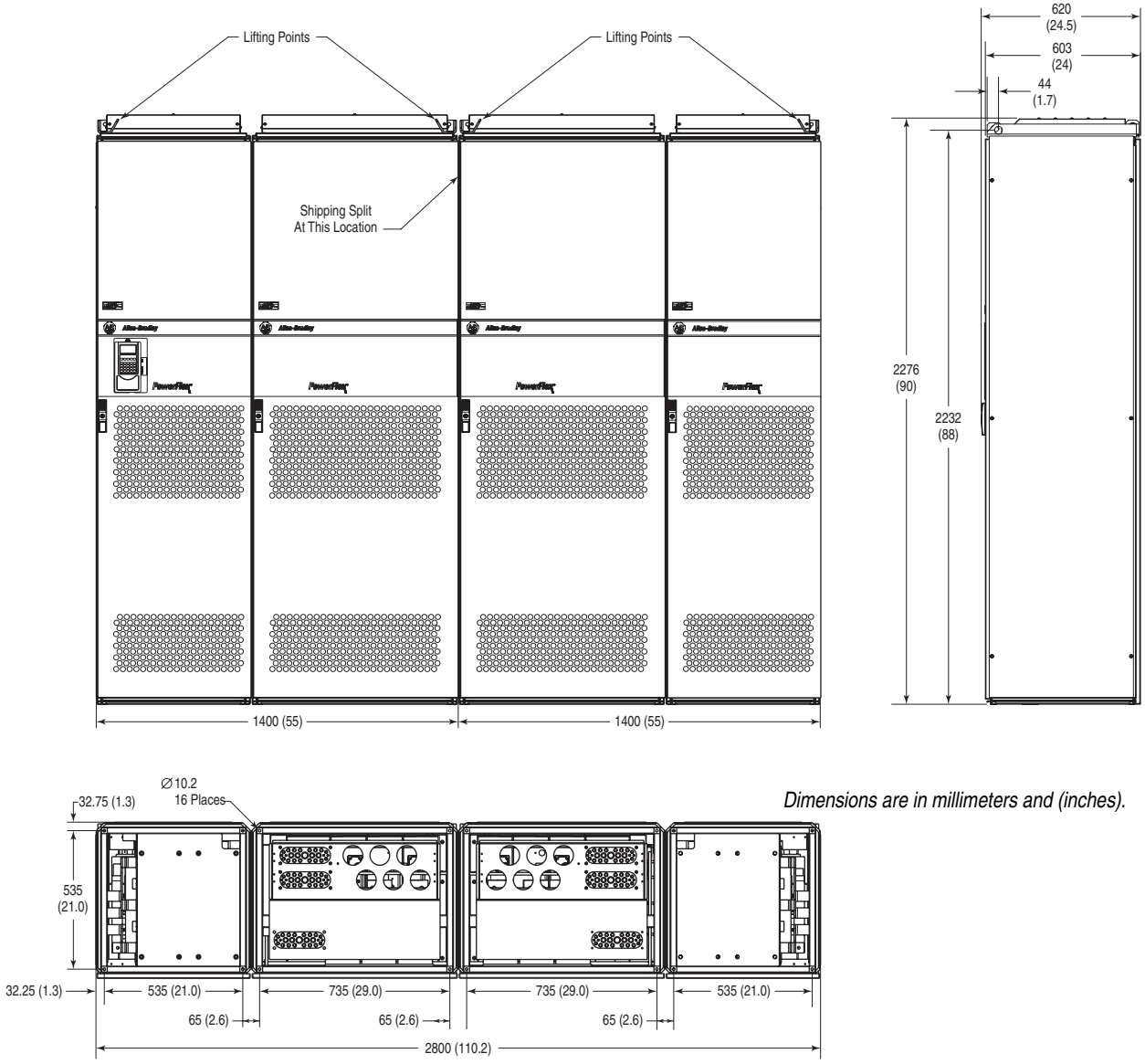
| Voltage Class | Drive Rating Amps | Approx. Weight kg (lbs.) Drive & Enclosure (AC Input) | Approx. Weight kg (lbs.) Drive & Enclosure (DC Input) |
|---|---|---|---|
| 400/480V AC (540/650V DC) | 1150 | 1248 (2751) | 600 (1323) |
| | 1300 | 1400 (3086) | 600 (1323) |
| | 1450 | 1400 (3086) | 600 (1323) |
| 600/690V AC (810/932V DC) | 920 | 1248 (2751) | 600 (1323) |
| | 1030 | 1248 (2751) | 600 (1323) |
| | 1180 | 1248 (2751) | 600 (1323) |

## Frame 14, 1500A (NEMA/UL Type 1 - IP 21) - Dimensions




*Dimensions are in millimeters and (inches).*

## Frame 14, Above 1500A (NEMA/UL Type 1 - IP 21) - Dimensions



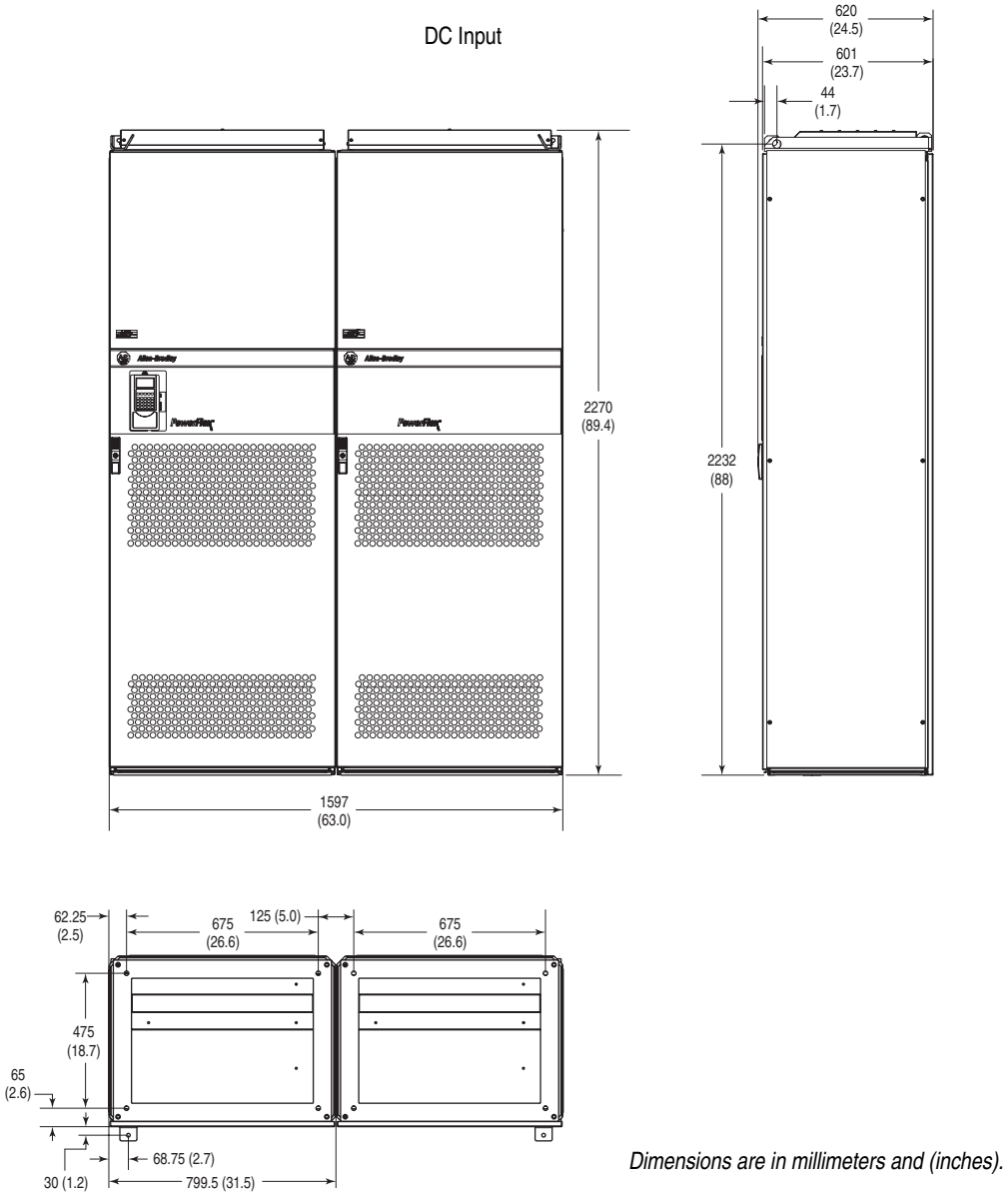

*Dimensions are in millimeters and (inches).*

**Note**: Refer to the *PowerFlex 700H and 700S Frame 9-14 Drives Installation Instructions*, publication PFLEX-IN006 …, for additional Frame 14 enclosure style dimensions.

AC Input Frame 14 Drive and Standard Rittal Enclosure (NEMA/UL Type 1 - IP21) Weights

| Voltage Class | Drive Rating Amps | Section 1 Drive & Enclosure Weight *kg (lbs.)* | Section 1 Drive, Enclosure & Packaging Weight *kg (lbs.)* | Section 2 Drive & Enclosure Weight *kg (lbs.)* | Section 2 Drive, Enclosure & Packaging Weight *kg (lbs.)* | Total Drive & Enclosure Weight (All Sections) *kg (lbs.)* |
|---|---|---|---|---|---|---|
| 400/480V AC (540/650V DC) | 1770 | 1120 (2469) | 1240 (2733) | 1120 (2469) | 1240 (2733) | 2240 (4938) |
| | 2150 | 1150 (2535) | 1270 (2799) | 1150 (2535) | 1270 (2799) | 2300 (5071) |
| | 2700 | 1920 (4233) | 2040 (4497) | 1920 (4233) | 2040 (4497) | 3840 (8466) |
| 600/690V AC (810/932V DC) | 1500 | 1270 (2800) | 1390 (3064) | 650 (1433) | 770 (1697) | 1920 (4233) |
| | 1900 | 1120 (2469) | 1240 (2733) | 1120 (2469) | 1240 (2733) | 2240 (4938) |
| | 2250 | 1150 (2535) | 1270 (2799) | 1150 (2535) | 1270 (2799) | 2300 (5071) |

## 7Frame 14, DC Input (NEMA/UL Type 1 - IP 21) - Dimensions



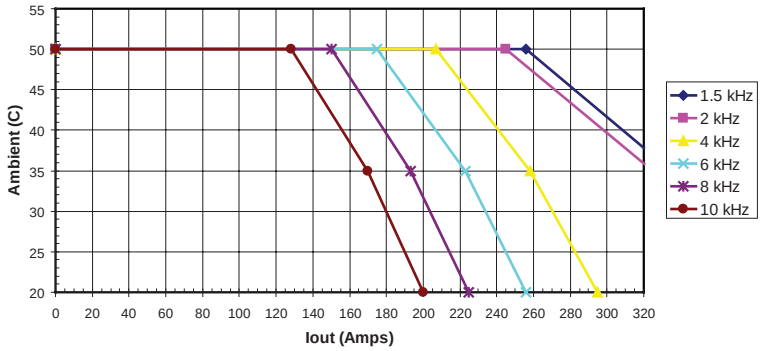
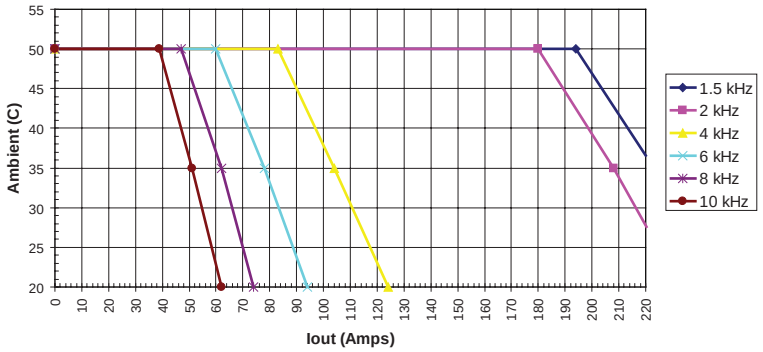

*Dimensions are in millimeters and (inches).*

DC Input Frame 14 Drive and Standard Rittal Enclosure (NEMA/UL Type 1 - IP21) Weights

| Voltage Class | Drive Rating Amps | Drive & Enclosure Weight *kg (lbs.)* | Drive, Enclosure & Packaging Weight *kg (lbs.)* |
|---|---|---|---|
| 400/480V AC (540/650V DC) | 1770 | 1330 (2866) | 1450 (3130) |
| | 2150 | 1330 (2866) | 1450 (3130) |
| | 2700 | 1330 (2866) | 1450 (3130) |
| 600/690V AC (810/932V DC) | 1500 | 1220 (2690) | 1340 (2954) |
| | 1900 | 1330 (2866) | 1450 (3130) |
| | 2250 | 1330 (2866 | 1450 (3130) |

## *Derating Guidelines*

### Carrier Derating Curves

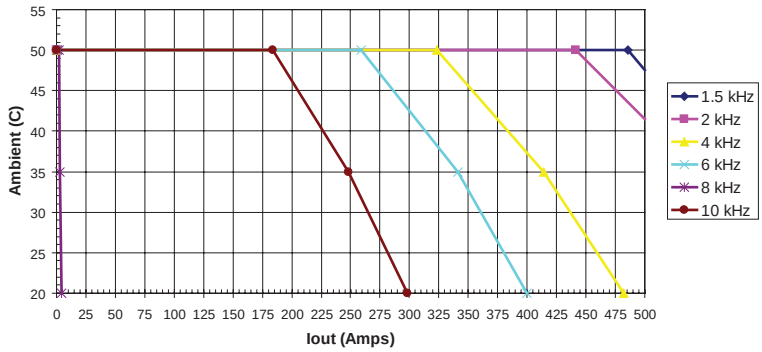
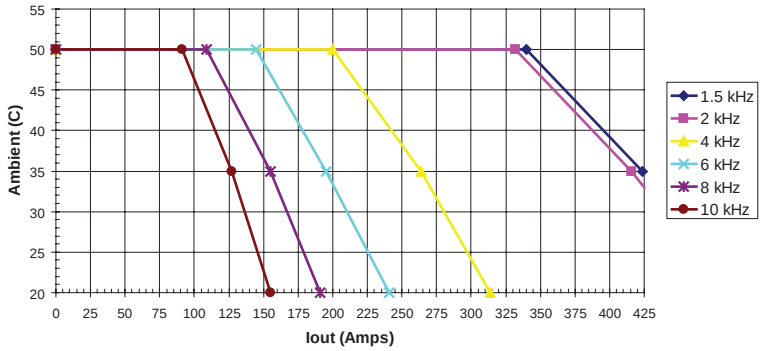
| Frame | Voltage Class | ND/HD Rating (Amps) | Frequency (kHz) (1) | Ambient Temp (°C) (2) | | | Derate |
|---|---|---|---|---|---|---|---|
| 9 | 400 | 300/245 | PWM | 50 | 35 | 20 |  |
| | | | 1.5 | 256 | 335 | 354 | |
| | | | 2.0 | 245 | 325 | 341 | |
| | | | 4.0 | 207 | 258 | 295 | |
| | | | 6.0 | 175 | 223 | 256 | |
| | | | 8.0 | 150 | 193 | 225 | |
| | | | 10.0 | 128 | 170 | 200 | |
| | 600 | 208/170 | PWM | 50 | 35 | 20 |  |
| | | | 1.5 | 194 | 223 | 249 | |
| | | | 2.0 | 180 | 208 | 233 | |
| | | | 4.0 | 83 | 104 | 124 | |
| | | | 6.0 | 60 | 78 | 94 | |
| | | | 8.0 | 47 | 62 | 74 | |
| | | | 10.0 | 39 | 51 | 62 | |





(1) Not all frequencies can be run on all drives.

(2) Rated ambient temperature is 40/50 °C (ND/HD) for 400V and 600V class drives.

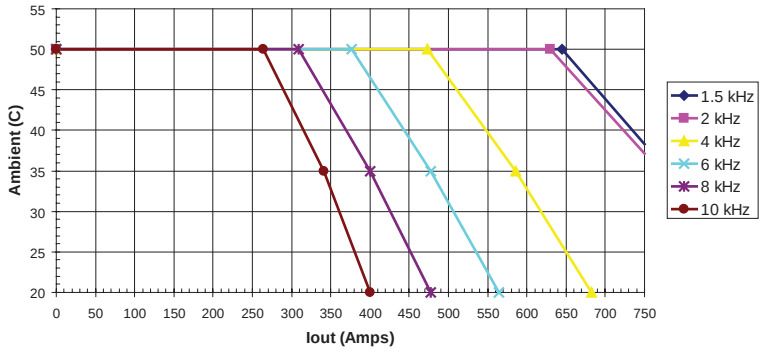
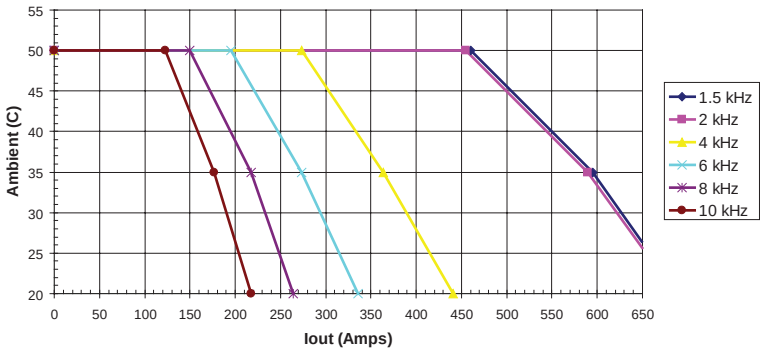
| Frame | Voltage Class | ND/HD Rating (Amps) | Frequency (kHz) (1) | Ambient Temp (°C) (2) | | | Derate |
|---|---|---|---|---|---|---|---|
| 10 | 400 | 500/420 | PWM | 50 | 35 | 20 |  |
| | | | 1.5 | 486 | 573 | 546 | |
| | | | 2.0 | 441 | 545 | 618 | |
| | | | 4.0 | 323 | 414 | 482 | |
| | | | 6.0 | 259 | 341 | 400 | |
| | | | 8.0 | 214 | 284 | 284 | |
| | | | 10.0 | 184 | 248 | 298 | |
| | 600 | 416/325 | PWM | 50 | 35 | 20 |  |
| | | | 1.5 | 340 | 424 | 492 | |
| | | | 2.0 | 332 | 416 | 486 | |
| | | | 4.0 | 200 | 264 | 314 | |
| | | | 6.0 | 145 | 195 | 241 | |
| | | | 8.0 | 109 | 155 | 191 | |
| | | | 10.0 | 91 | 127 | 155 | |





(1) Not all frequencies can be run on all drives.

(2) Rated ambient temperature is 40/40 °C (ND/HD) for 400V class drives and 35/40 °C (ND/HD) for 600V class drives.

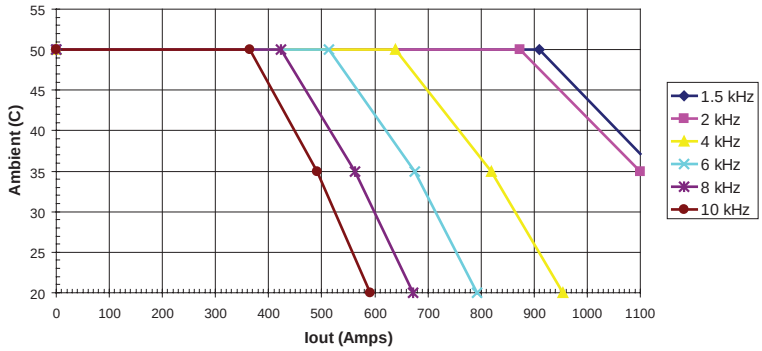
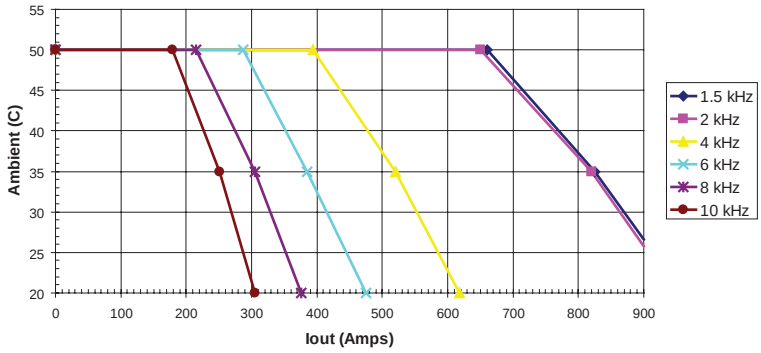
| Frame | Voltage Class | ND/HD Rating (Amps) | Frequency (kHz) (1) | Ambient Temp (°C) (2) | | | Derate |
|---|---|---|---|---|---|---|---|
| 11 | 400 | 730/650 | PWM | 50 | 35 | 20 |  |
| | | | 1.5 | 645 | 780 | 886 | |
| | | | 2.0 | 630 | 770 | 856 | |
| | | | 4.0 | 473 | 586 | 682 | |
| | | | 6.0 | 377 | 477 | 564 | |
| | | | 8.0 | 309 | 400 | 477 | |
| | | | 10.0 | 264 | 341 | 400 | |
| | 600 | 590/502 | PWM | 50 | 35 | 20 |  |
| | | | 1.5 | 460 | 595 | 690 | |
| | | | 2.0 | 455 | 590 | 686 | |
| | | | 4.0 | 273 | 364 | 441 | |
| | | | 6.0 | 195 | 273 | 336 | |
| | | | 8.0 | 150 | 218 | 264 | |
| | | | 10.0 | 123 | 177 | 218 | |





(1) Not all frequencies can be run on all drives.

(2) Rated ambient temperature is 40/40 °C (ND/HD) for 400V and 600V class drives.

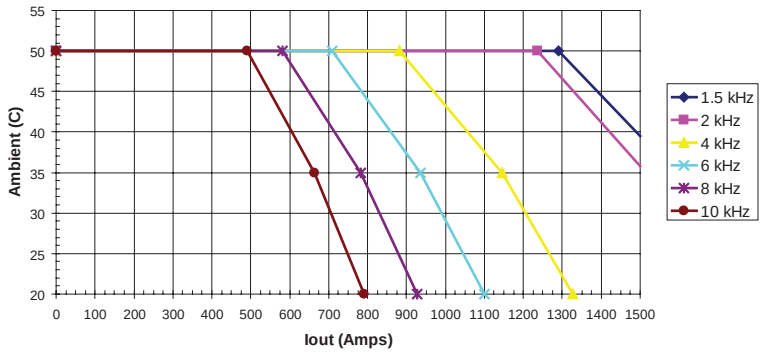
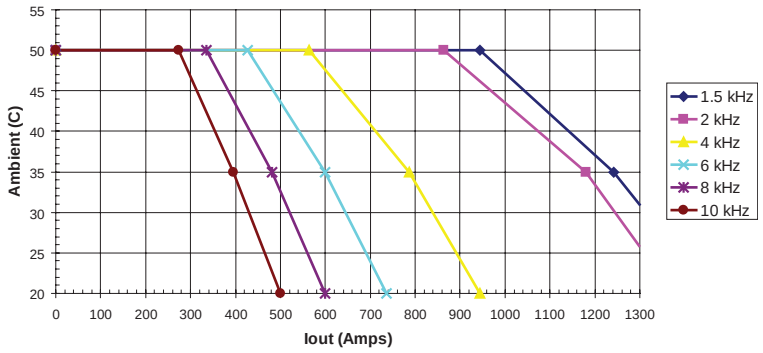
| Frame | Voltage Class | ND/HD Rating (Amps) | Frequency (kHz) (1) | Ambient Temp (°C) (2) | | | Derate |
|---|---|---|---|---|---|---|---|
| 12 | 400 | 1030/920 | PWM | 50 | 35 | 20 |  |
| | | | 1.5 | 910 | 1134 | 1278 | |
| | | | 2.0 | 873 | 1100 | 1224 | |
| | | | 4.0 | 639 | 819 | 954 | |
| | | | 6.0 | 513 | 675 | 792 | |
| | | | 8.0 | 423 | 562 | 672 | |
| | | | 10.0 | 364 | 492 | 591 | |
| | 600 | 820/650 | PWM | 50 | 35 | 20 |  |
| | | | 1.5 | 660 | 825 | 959 | |
| | | | 2.0 | 650 | 820 | 950 | |
| | | | 4.0 | 394 | 520 | 618 | |
| | | | 6.0 | 287 | 385 | 475 | |
| | | | 8.0 | 215 | 305 | 376 | |
| | | | 10.0 | 179 | 251 | 305 | |





(1) Not all frequencies can be run on all drives.

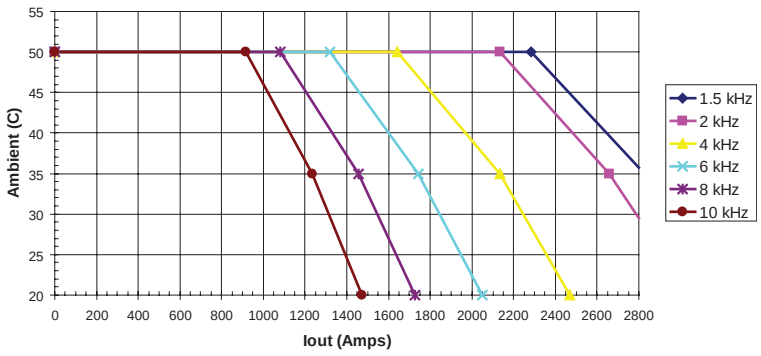
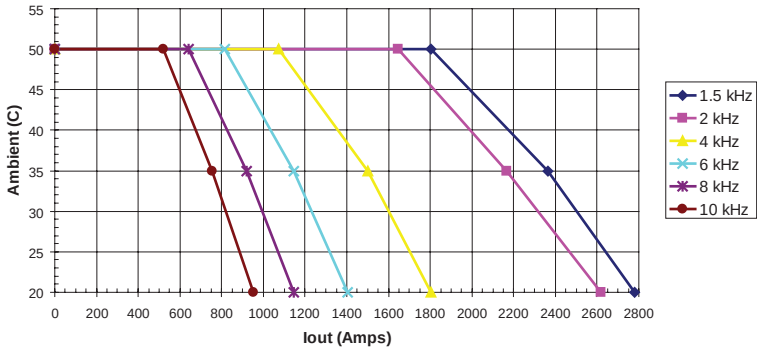
(2) Rated ambient temperature is 40/35 °C (ND/HD) for 400V class drives and 35/40 °C (ND/HD) for 600V class drives.

| Frame | Voltage Class | ND/HD Rating (Amps) | Frequency (kHz) (1) | Ambient Temp (°C) (2) | | | Derate |
|---|---|---|---|---|---|---|---|
| 13 | 400 | 1450/1200 | PWM | 50 | 35 | 20 |  |
| | | | 1.5 | 1291 | 1591 | 1809 | |
| | | | 2.0 | 1236 | 1518 | 1727 | |
| | | | 4.0 | 882 | 1145 | 1327 | |
| | | | 6.0 | 709 | 936 | 1100 | |
| | | | 8.0 | 582 | 782 | 927 | |
| | | | 10.0 | 491 | 664 | 791 | |
| | 600 | 1180/1030 | PWM | 50 | 35 | 20 |  |
| | | | 1.5 | 945 | 1241 | 1457 | |
| | | | 2.0 | 864 | 1180 | 1374 | |
| | | | 4.0 | 564 | 786 | 945 | |
| | | | 6.0 | 427 | 600 | 736 | |
| | | | 8.0 | 336 | 482 | 600 | |
| | | | 10.0 | 273 | 395 | 500 | |





(1) Not all frequencies can be run on all drives.
(2) Rated ambient temperature is 40/40 °C (ND/HD) for 400V and 600V class drives.

| Frame | Voltage Class | ND/HD Rating (Amps) | Frequency (kHz) (1) | Ambient Temp (°C) (2) | | | Derate |
|---|---|---|---|---|---|---|---|
| 14 | 400 | 2700/2300 | PWM | 50 | 35 | 20 |  |
| | | | 1.5 | 2285 | 2830 | 3221 | |
| | | | 2.0 | 2133 | 2658 | 3047 | |
| | | | 4.0 | 1642 | 2133 | 2471 | |
| | | | 6.0 | 1320 | 1744 | 2048 | |
| | | | 8.0 | 1083 | 1456 | 1727 | |
| | | | 10.0 | 914 | 1236 | 1473 | |
| | 600 | 2250/1900 | PWM | 50 | 35 | 20 |  |
| | | | 1.5 | 1803 | 2366 | 2778 | |
| | | | 2.0 | 1647 | 2167 | 2620 | |
| | | | 4.0 | 1075 | 1499 | 1803 | |
| | | | 6.0 | 815 | 1144 | 1404 | |
| | | | 8.0 | 641 | 919 | 1144 | |
| | | | 10.0 | 520 | 754 | 953 | |

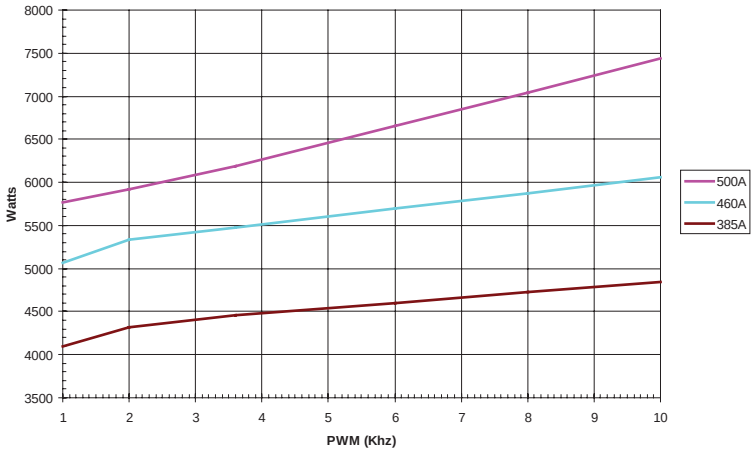


(1) Not all frequencies can be run on all drives.

(2) Rated ambient temperature is 40/40 °C (ND/HD) for 400V class drives and 35/35 °C (ND/HD) for 600V class drives.

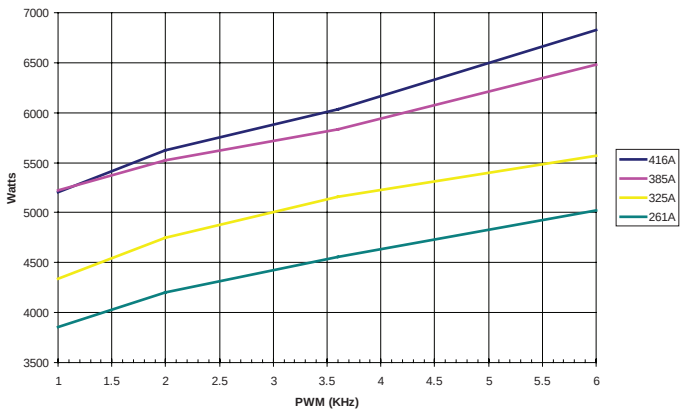
## Watts Loss - Frames 10 - 14

| Frame | Voltage Class | Frequency (1) | Irated Amps | | | Watts Loss Curves |
|---|---|---|---|---|---|---|
| 10 | 400V | PWM | @500 | @460 | @385 | |
| | | 1.0 kHz | 5766 | 5067 | 4097 | |
| | | 2.0 kHz | 5921 | 5335 | 4320 | |
| | | 3.6 kHz | 6183 | 5479 | 4459 | |
| | | 6.0 kHz | 6652 | 5695 | 4602 | |
| | | 8.0 kHz | 7043 (2) | 5875 (2) | 4722 (2) | |
| | | 10.0 kHz | 7434 (2) | 6055 (2) | 4841 (2) | |



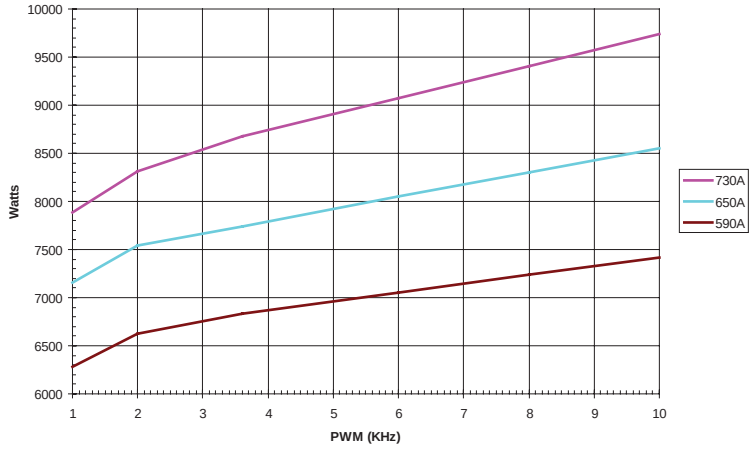

(1) Consult the factory for further derate information at other frequencies.
(2) Value calculated from slope.

| Frame | Voltage Class | Frequency (1) | Irated Amps | | | | | Watts Loss Curves |
|---|---|---|---|---|---|---|---|---|
| 10 | 600V | PWM | @416 | @385 | @325 | @ 261 | @ 205 | |
| | | 1.0 kHz | 5206 | 5223 | 4341 | 3854 | 3118 | |
| | | 2.0 kHz | 5622 | 5527 | 4751 | 4206 | 3413 | |
| | | 3.6 kHz | 6038 | 5831 | 5161 | 4559 | 3708 | |
| | | 6.0 kHz | 6825 | 6478 | 5571 | 5020 | 3982 | |



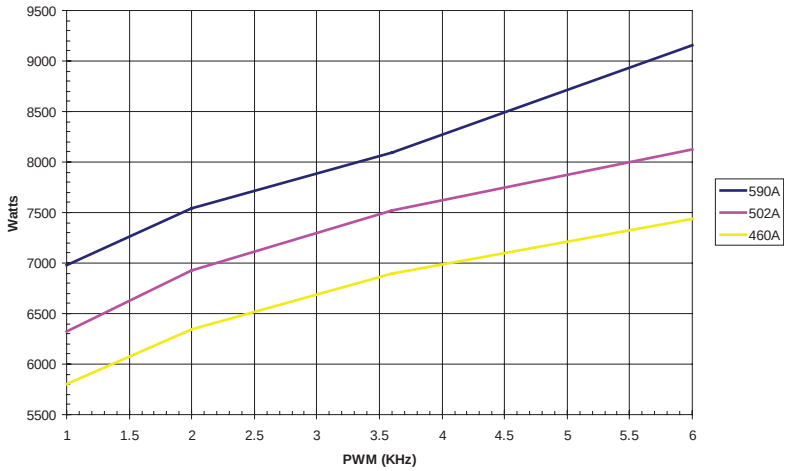

(1) Consult the factory for further derate information at other frequencies.

| Frame | Voltage Class | Frequency (1) | Irated Amps | | | Watts Loss Curves |
|---|---|---|---|---|---|---|
| 11 | 400V | PWM | @730 | @650 | @590 | |
| | | 1.0 kHz | 7886 | 7160 | 6279 | |
| | | 2.0 kHz | 8312 | 7538 | 6620 | |
| | | 3.6 kHz | 8680 | 7743 | 6833 | |
| | | 6.0 kHz | 9078 | 8049 | 7053 | |
| | | 8.0 kHz | 9410 (2) | 8302 (2) | 7236 (2) | |
| | | 10.0 kHz | 9742 (2) | 8556 (2) | 7419 (2) | |



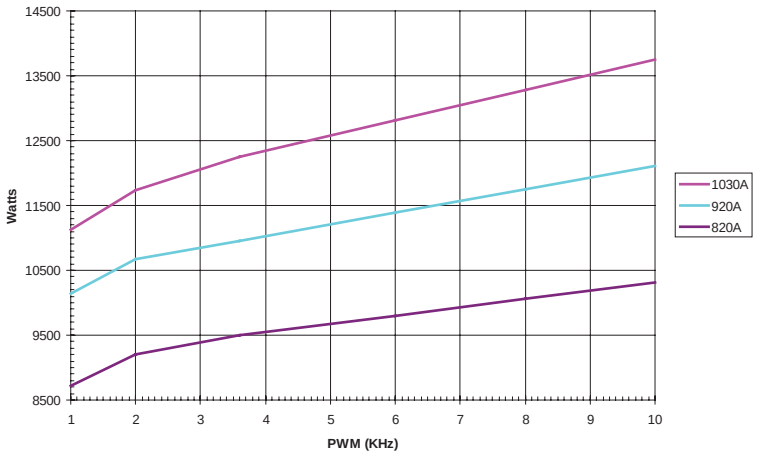
(1) Consult the factory for further derate information at other frequencies.
(2) Value calculated from slope.

| Frame | Voltage Class | Frequency (1) | Irated Amps | | | Watts Loss Curves |
|---|---|---|---|---|---|---|
| 11 | 600V | PWM | @590 | @502 | @460 | |
| | | 1.0 kHz | 6982 | 6327 | 5797 | |
| | | 2.0 kHz | 7539 | 6925 | 6345 | |
| | | 3.6 kHz | 8096 | 7522 | 6893 | |
| | | 6.0 kHz | 9152 | 8120 | 7441 | |




(1) Consult the factory for further derate information at other frequencies.

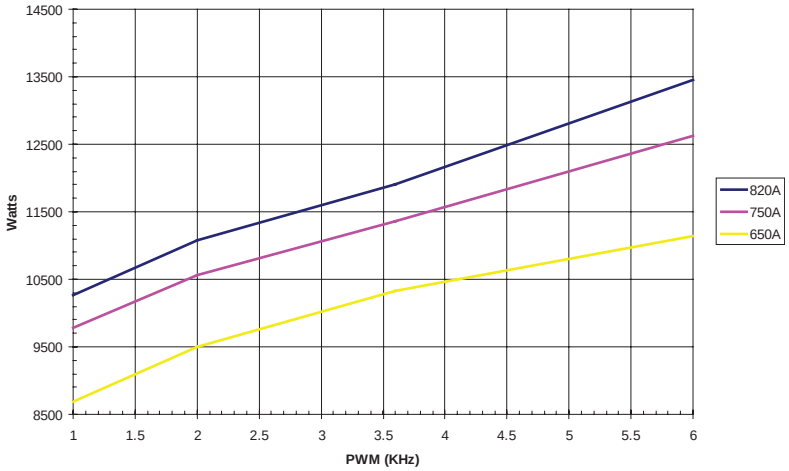
| Frame | Voltage Class | Frequency (1) | Irated Amps | | | Watts Loss Curves |
|---|---|---|---|---|---|---|
| 12 | 400V | PWM | @1030 | @920 | @820 | |
| | | 1.0 kHz | 11126 | 10135 | 8726 | |
| | | 2.0 kHz | 11729 | 10670 | 9200 | |
| | | 3.6 kHz | 12247 | 10959 | 9497 | |
| | | 6.0 kHz | 12809 | 11391 | 9802 | |
| | | 8.0 kHz | 13277 (2) | 11751 (2) | 10057 (2) | |
| | | 10.0 kHz | 13745 (2) | 12110 (2) | 10311 (2) | |




(1) Consult the factory for further derate information at other frequencies.
(2) Value calculated from slope.

| Frame | Voltage Class | Frequency (1) | Irated Amps | | |
|---|---|---|---|---|---|
| 12 | 600V | PWM | @820 | @750 | @650 |
| | | 1.0 kHz | 10263 | 9781 | 8682 |
| | | 2.0 kHz | 11082 | 10570 | 9502 |
| | | 3.6 kHz | 11901 | 11358 | 10322 |
| | | 6.0 kHz | 13453 | 12620 | 11143 |

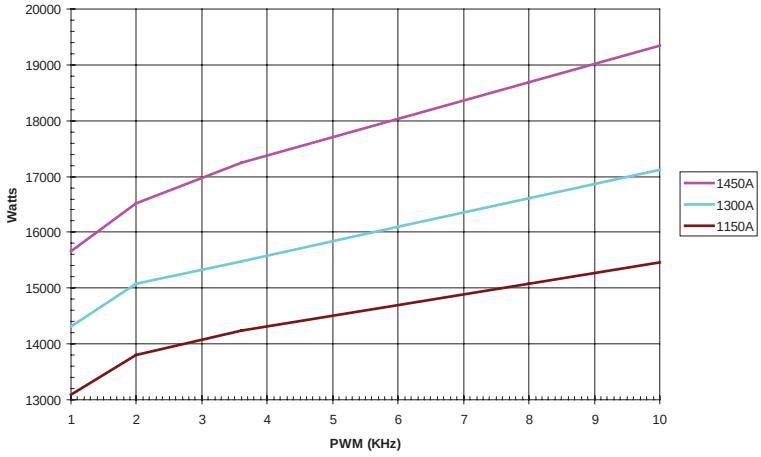
Watts Loss Curves




(1) Consult the factory for further derate information at other frequencies.

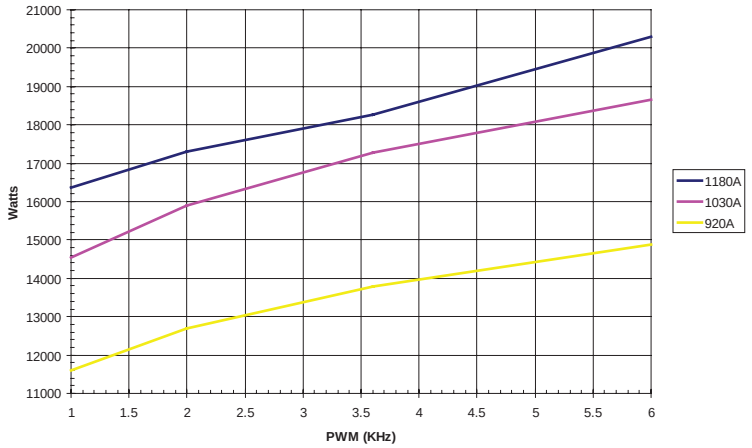
| Frame | Voltage Class | Frequency (1) | Irated Amps | | |
|---|---|---|---|---|---|
| 13 | 400V | PWM | @1450 | @1300 | @1150 |
| | | 1.0 kHz | 15663 | 14321 | 13090 |
| | | 2.0 kHz | 16511 | 15077 | 13801 |
| | | 3.6 kHz | 17241 | 15485 | 14245 |
| | | 6.0 kHz | 18032 | 16096 | 14703 |
| | | 8.0 kHz | 18691 (2) | 16604 (2) | 15085 (2) |
| | | 10.0 kHz | 19350 | 17113 (2) | 15467 (2) |

Watts Loss Curves



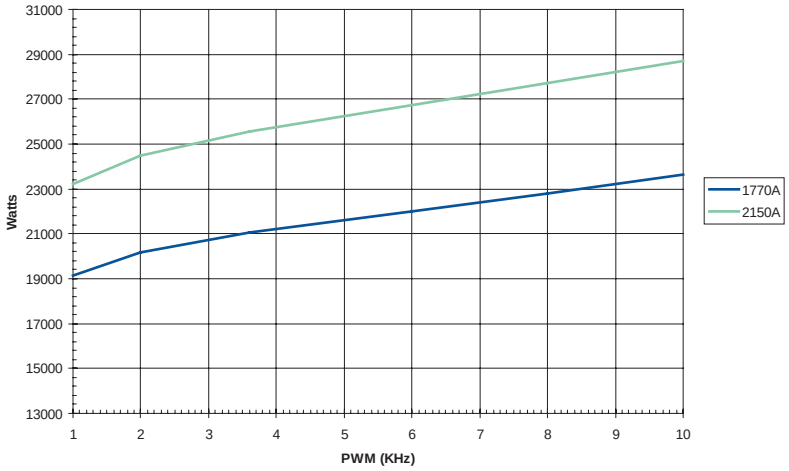

(1) Consult the factory for further derate information at other frequencies.
(2) Value calculated from slope.

| Frame | Voltage Class | Frequency (1) | Irated Amps | | | Watts Loss Curves |
|---|---|---|---|---|---|---|
| 13 | 600V | PWM | @1180 | @1030 | @920 | |
| | | 1.0 kHz | 16356 | 14533 | 11595 | |
| | | 2.0 kHz | 17306 | 15907 | 12691 | |
| | | 3.6 kHz | 18257 | 17280 | 13786 | |
| | | 6.0 kHz | 20286 | 18653 | 14882 | |



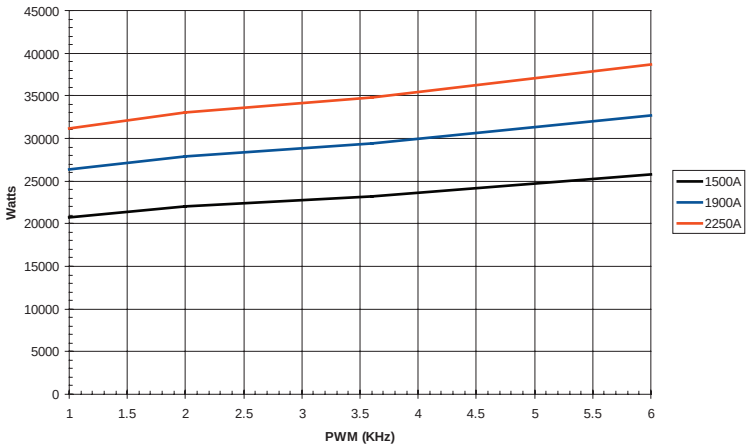

(1) Consult the factory for further derate information at other frequencies.

| Frame | Voltage Class | Frequency (1) | Irated Amps | | Watts Loss Curves |
|---|---|---|---|---|---|
| 14 | 400V | PWM | @1770 | @2150 | |
| | | 1.0 kHz | 19120 | 23225 | |
| | | 2.0 kHz | 20155 | 24482 | |
| | | 3.6 kHz | 21045 | 25564 | |
| | | 6.0 kHz | 22011 | 26736 | |
| | | 8.0 kHz | 22815 (2) | 27714 (2) | |
| | | 10.0 kHz | 23620 (2) | 28691 (2) | |




(1) Consult the factory for further derate information at other frequencies.
(2) Value calculated from slope.

| Frame | Voltage Class | Frequency (1) | Irated Amps | | | Watts Loss Curves |
|---|---|---|---|---|---|---|
| 14 | 600V | PWM | @1500 | @1900 | @2250 | |
| | | 1.0 kHz | 20791 | 26335 | 31186 | |
| | | 2.0 kHz | 22000 | 27866 | 33000 | |
| | | 3.6 kHz | 23209 | 29397 | 34813 | |
| | | 6.0 kHz | 25787 | 32664 | 38681 | |




(1) Consult the factory for further derate information at other frequencies.

## *Standard Drive Specifications*

| Category | Description | |
|---|---|---|
| **Agency Certification** | c UL us | Listed to UL508C and CAN/CSA-C2.2 No. 14-M91. |
| | CE | Marked for all applicable European Directives(1)<br>EMC Directive (89/336/EEC)<br>EN 61800-3 Adjustable Speed electrical power drive systems<br>Low Voltage Directive (73/23/EEC)<br>EN 50178 Electronic Equipment for use in Power Installations |
| | N223 | Certified to AS/NZS, 1997 Group 1, Class A. |
| | Ex II 2 G/D | Certified to ATEX directive 94/9/EC. Group II Category (2) GD Applications with ATEX Approved Motors (Gate Disable option card 20C-DG1 must be installed). |
| | | The drive is also designed to meet the following specifications:<br>NFPA 70 - US National Electrical Code<br>NEMA ICS 7.1 - Safety standards for Construction and Guide for Selection, Installation and Operation of Adjustable Speed Drive Systems.<br>IEC 146 - International Electrical Code. |

(1) Applied noise impulses may be counted in addition to the standard pulse train causing erroneously high [Pulse Freq] readings.

| Category | Specification | Description | | | | |
|---|---|---|---|---|---|---|
| **Protection** | **Drive** | **380/400V** | **480V** | **500V** | **600V** | **690V** |
| | AC Input Overvoltage Trip: | 611Vac | 611Vac | 611Vac | 806Vac | 806Vac |
| | AC Input Undervoltage Trip: | 235Vac | 235Vac | 235Vac | 326Vac | 326Vac |
| | Bus Overvoltage Trip: | 911Vdc | 911Vdc | 911V dc | 1200V dc | 1200V dc |
| | Bus Undervoltage Shutoff/Fault: | 333Vdc | 333Vdc | 333Vdc | 461Vdc | 461Vdc |
| | Nominal Bus Voltage (Full Load): | 517Vdc | 621Vdc | 645Vdc | 776Vdc | 890Vdc |
| | Heat Sink Thermistor: | Monitored by microprocessor overtemp trip | | | | |
| | Drive Overcurrent Trip<br>Software Overcurrent Trip:<br>Hardware Overcurrent Trip:<br>Instantaneous Current Limit: | <br>—<br>360% of rated Heavy Duty current (typical)<br>— | | | | |
| | Line transients: | up to 6000 volts peak per IEEE C62.41-1991 | | | | |
| | Control Logic Noise Immunity: | Showering arc transients up to 1500V peak | | | | |
| | Power Ride-Thru: | 15 milliseconds at full load | | | | |
| | Logic Control Ride-Thru: | 0.5 seconds minimum, 2 seconds typical | | | | |
| | Ground Fault Trip: | Phase-to-ground on drive output | | | | |
| | Short Circuit Trip: | Phase-to-phase on drive output | | | | |
| **Environment** | Altitude: | 1000 m (3300 ft.) maximum without derating. Derate the drive by 1% for every 100 m (328 ft.) above 1000 m (3300 ft.). | | | | |
| | Maximum Surrounding Air Temperature without De-rating: | Based on drive rating, refer to Drive Frame chapters | | | | |
| | Storage Temperature (all const.): | –40 to 60° C (–40 to 140° F) | | | | |
| | Atmosphere: | **Important:** Drive **must not** be installed in an area where the ambient atmosphere contains volatile or corrosive gas, vapors or dust. If the drive is not going to be installed for a period of time, it must be stored in an area where it will not be exposed to a corrosive atmosphere. | | | | |
| | Relative Humidity: | 5 to 95% non-condensing | | | | |
| | Shock:<br>Non-operational | <br>15G peak for 11ms duration (±1.0 ms) | | | | |
| | Vibration: | 2 mm (0.0787 in.) displacement, 1G peak<br>EN50178 / EN60068-2-6 | | | | |
| | Sound: | Frame | Sound Level | Back-ground Noise Level | **Note**: Sound pressure level is measured at 1 meter. All devices measured are 400V IP21 and in power up mode. | |
| | | 9 | 78 dba | 49 dba | | |
| | | 10 | 77 dba | 49 dba | | |
| | | 13 | 76d ba | 46 dba | | |
| **Electrical** | AC Input Voltage Tolerance: | ±10% | | | | |
| | Frequency Tolerance: | 47-63 Hz. | | | | |
| | Input Phases: | Three-phase input provides full rating for all drives. Single-phase operation provides 50% of rated current. | | | | |
| | Displacement Power Factor: | 0.98 across entire speed range. | | | | |
| | Efficiency: | 97.5% at rated amps, nominal line volts. | | | | |
| | Maximum Short Circuit Rating: | ≤ 200,000 Amps symmetrical. | | | | |
| | Actual Short Circuit Rating: | Determined by AIC rating of installed fuse/circuit breaker. | | | | |
| | Maximum Drive to Motor Power Ratio: | Recommended not greater than 2:1 ratio. | | | | |

| Category | Specification | Description |
|---|---|---|
| **Control** | Method: | Sine coded PWM with programmable carrier frequency. Ratings apply to all drives (refer to the *Derating Guidelines* in the PowerFlex Reference Manual). The drive can be supplied as 6 pulse or 12 pulse in a configured package. |
| | Carrier Frequency: | 1-6 kHz. |
| | Output Voltage Range: | 0 to rated motor voltage |
| | Output Frequency Range: | 0 to 320 Hz |
| | Frequency Accuracy<br>Digital Input:<br>Analog Input: | <br>Within ±0.01% of set output frequency.<br>Within ±0.4% of maximum output frequency. |
| | Frequency Control: | Speed regulation - with Slip Compensation<br>0.5% of base speed across 40:1 speed range<br>40:1 operating range |
| | Selectable Motor Control: | Sensorless Vector with full tuning. Standard V/Hz with full custom capability. |
| | Stop Modes: | Multiple programmable stop modes including - Ramp, Coast, DC-Brake, Ramp-to-Hold and S-curve. |
| | Accel/Decel: | Two independently programmable accel and decel times. Each time may be programmed from 0 to 3276.7 seconds in 0.1 second increments. |
| | S-Curve Time: | 0-100% of accel/decel time. |
| | Intermittent Overload: | 110% Overload capability for up to 1 minute<br>150% Overload capability for up to 2 seconds |
| | Current Limit Capability: | Proactive Current Limit programmable from 20 to 160% of rated output current. Programmable proportional gain. |
| | Electronic Motor Overload Protection: | Class 10 protection with speed sensitive response. Investigated by U.L. to comply with N.E.C. Article 430. U.L. File E59272, volume 12. |

## *Configured Drives Program*

### Description

The PowerFlex 700H Configured Drives Program allows users to create drive packages based on their specific needs. This program enhances standalone drive functionality through additional control, power and packaging options which are ideal for OEM and end users with special installation needs.

The Configured Drives Program offers users the ability to create drive packages that go beyond the standard drives offering. Catalog numbers and pricing are provided to allow quotation without requesting a custom quote from the factory.

- Assembling a catalog string and total list price for quotation purposes.
  A complete Configured Drive catalog number and total list price is created by taking the applicable base drive and options entirely from the Configured Drives Program.
- Entering an order on Passport.
  Enter a custom quote request on Passport using “SP-SDB-CUSTOM” as the line item part number and entering the complete catalog string and total list price in the Competitive Summary. For questions or help with a custom quote or order entry, please contact the Configured Drives Group at 262-512-8415.

### Target Lead Times

Lead Times provided on the following pages are based on the codes shown below. Note that lead times may vary from those shown due to manufacturing capacity and parts availability. See Passport for current lead times.

| Code | Description | Lead Time (Work Days) |
|---|---|---|
| P | Pre-Engineered (applies to Catalog Configured) | 60 |
| Q | Quick Turn | 60 |
| X | Long Lead Time | 60 (1) |
| C | Custom | Consult Factory |

(1) Dependent on options selected.

## Catalog Number Explanation

Position

| 1-3 | 4 | 5-7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17-18 | 19-20 | 21 | 22-23 | 24 | 25 … |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 21C | D | 261 | A | 0 | A | N | N | B | N | A | 0 | NN | NN | - | ND | - | J4… |
| *a* | *b* | *c* | *d* | *e* | *f* | *g* | *h* | *i* | *j* | *k* | *l* | *m* | *n* | *o* | *p* | *q* | *r* |

*a*

| Drive | |
|---|---|
| Code | Type |
| 21C | Configured PowerFlex 700H |

*b*

| Voltage Rating | | | |
|---|---|---|---|
| Code | Voltage | Ph. | Pulse |
| D | 480V AC | 3 | 6 |
| U ➢ | 480V AC | 3 | 18 |

➢ Enter a custom quote request.

*d*

| Enclosure | |
|---|---|
| Code | Enclosure |
| A | IP 20, NEMA/UL Type 1 |
| B | IP 20, NEMA/UL Type 1, MCC Style |

*e*

| HIM | |
|---|---|
| Code | Operator Interface |
| 0 | Drive Mounted Blank Cover |
| M | Door Mounted Programmer Only (NEMA/UL Type 1) |
| P | Door Mounted w/LCD Full Numeric (NEMA/UL Type 1) |

*c*

| Rating ♣ | | |
|---|---|---|
| 480V, 60Hz Input | | |
| Code | Output Amps - ND (HD) | Hp - ND (HD) |
| 261 ✶ | 240 (180) | 200 (150) |
| 300 ✶ | 300 (240) | 250 (200) |
| 385 ✶ | 361 (300) | 300 (250) |
| 460 ✶ | 414 (361) | 350 (300) |
| 500 ✶ | 500 (414) | 450 (350) |
| 590 ✶ | 590 (515) | 500 (450) |
| 650 | 650 (590) | 500 (500) |
| 730 ✶ | 708 (650) | 600 (500) |
| 820 ✶ | 820 (708) | 700 (600) |
| 920 | 920 (820) | 800 (700) |
| 1K0 | 1030 (920) | 900 (800) |
| 1K1 | 1150 (1030) | 1000 (900) |
| 1K3 | 1300 (1150) | 1200 (1000) |
| 1K4 | 1450 (1180) | 1250 (1000) |
| 1K7 | 1770 (1600) | 1500 (1400) |
| 2K1 | 2150 (1940) | 1900 (1700) |
| 2K7 | 2700 (2300) | 2300 (2000) |

♣ 700H drives include an input line reactor as standard.

✶ Current ratings are matched to NEC or typical motor ampere requirements. Ratings up to drive output amps are available with a custom quote.

*f*

| Documentation | |
|---|---|
| Code | Type |
| A | User Manual |

*g*

| Internal Brake IGBT | |
|---|---|
| Code | w/Brake IGBT |
| Y ∗ | Yes |
| N | No |

∗ Available on Frame 9 drives Only.

*h*

| Brake Resistor | |
|---|---|
| Code | w/Resistor |
| N | No |

*i*

| Internal EMC Filter & Common Mode Choke | | |
|---|---|---|
| Code | CE Filter | CM Choke |
| B | Yes | No |
| N ‡♠ | No | No |

‡ For use on ungrounded or resistive grounded distribution systems (Frame 9 drives only).

♠ Must be selected for 18 pulse drives (Voltage code "U").

*j*

| Internal Communication Adapters | |
|---|---|
| Code | Version |
| B | BACnet MS/TP |
| C | ControlNet (Coax) |
| D | DeviceNet |
| E | Ethernet/IP |
| H | HVAC |
| I | Interbus |
| L | LonWorks |
| N | None |
| P | PROFIBUS |
| R | Remote I/O |
| S | RS485 |

*k*

| Control and I/O | |
|---|---|
| Code | I/O Volts |
| A | 24V DC |
| B | 115V AC |

*l*

| Feedback | |
|---|---|
| Code | Type |
| 0 | None |

*m*

| Special Options | |
|---|---|
| Code | Type |
| NN | None |

*n*

| Special Options | |
|---|---|
| Code | Type |
| NN | None |

*p*

| Drive Duty | |
|---|---|
| Code | Type |
| ND ✦ | Normal |
| HD ✦ | Heavy |

✦ Must select either -ND or HD.

*r*

| Engineered Options | |
|---|---|
| Code | Description |
| -B0 § | Bypass Not Required |
| -B1/B51 §❄ | Manual Bypass |
| -B2/B52 ❄ | Auto Bypass |
| -C1 § | Drive Only Control Power |
| -C5 § | 115V User Supplied Control Power |
| -C7 | Fan Control w/Thermostat |
| -E4 | Enclosure Space Heater, Remote Power |
| -E9 | Nameplate, Door Mounted |
| -G1 | Johnson Controls Metasys® Interface |
| -J1 | Aux. Contacts, Control Power On |
| -J2 | Aux. Contacts, Drive Fault |
| -J3 | Aux. Contacts, Alarm |
| -J4 | Aux. Contacts, Run |
| -J5 | Aux. Contacts, At Speed |
| -J8/J58 ❄ | Motor Heater Control, Remote Power (180W Max.) |
| -L2 | 3% Output Load Reactor |
| -M3 | Motor Run Meter, Drive/Bypass |
| -N1 | Isolated Analog Input, 0-10V DC |
| -N2 | Isolated Analog Input, 4-20 mA |
| -N3 | Isolated Analog Output, 0-10V DC |
| -N5 | Building Mng. Control Interface |
| -P1 §⌘ | No Input Protection |
| -P2 §⌘ | Input Fuses, Drive |
| -P3 § | Circuit Breaker, Drive |
| -P4 § | Circuit Breaker, Drive/Bypass Mode |
| -P6 § | Fused Disconnect Switch, Drive |
| -P7 §⌘ | Fused Disconnect Switch, Drive/Bypass Mode |
| -P8 ❖ | Disconnect Switch (Non-Fused), Drive/Bypass Mode |
| -P10 ❖ | Input Fuse Block (No Fuses), Drive/Bypass Mode |
| -P11 | Contactor, Drive Input |
| -P12 | Contactor, Drive Output |
| -S1/S51 ❄ | H/O/A S.S. (Start/Stop/Spd. Ref.) |
| -S9/S59 ❄ | Run Pilot Light |
| -S10/S60 ❄ | Drive Fault Pilot Light |
| -S11/S61 ❄ | At Speed Pilot Light |
| -S12/S62 ❄ | Drive Alarm Pilot Light |
| -S13/S63 ❄ | Control Power On Pilot Light |
| -S14/S64 ❄ | Drive & Bypass Mode Pilot Lights |
| -S15/S65 ❄ | Bypass Mode & Auto Bypass En. P.L. |
| -S16/S66 ❄ | Drive Disable Mushroom P.B. |
| -S17/S67 ❄ | Motor Fault Pilot Light |
| -S18/S68 ❄ | Speed Potentiometer (1-Turn) |

§ Must select either Bypass option -B0 or B1/B51, Power Disconnecting Means option -P1, P2, P3, P4, P6 or P7, and Control Power option -C1 or C5.

❄ Denotes 800F/800T device. When selecting multiple options, Do Not combine 800F and 800T devices (all devices must be the same type).

⌘ 6 Pulse drives only.

❖ 18 Pulse drives only.

## How to Order

- **Step 1**. Select the PowerFlex 700H Base Drive Catalog Number and required options from the Configured Drives Option section below.
- **Step 2**. Specify additional required options (starting on page XX). The listing is divided into simple categories to assist in quickly locating specific needs. Some options are horsepower and/or voltage specific, or will have special rules associated with them – Read all footnotes.
- **Step 3**. After generating a complete catalog number string, do an Option Compatibility Check by referring to the table starting on page XX.
- **Step 4**. Entering an order on Passport.
  Note that a "C" lead time requires a custom quote. Enter a custom quote request on Passport using “SP-SDB-CUSTOM” as the line item part number and entering the complete catalog string and total list price in the Competitive Summary. For questions or help with a custom quote or order entry, please contact the Configured Drives Group at 262-512-8415.

**Example**: A refrigeration plant application requires a variable speed control for an existing 500 Hp, 480V AC, 580A conveyor motor. Both drive and motor will be located in a clean, but cold environment. Local 115V control is required for programming, start, stop, and speed. Speed reference must be selectable from a remote location as well. The motor has an internal heater requiring power. A system disconnect switch is user supplied and drive branch circuit fusing is required. Control power is required.

Configured Drives Options

| Application Requirements | Description | Cat. No./Option Code | Position | Lead Time |
|---|---|---|---|---|
| 500 Hp, 480V, 650A, Clean Environment | Basic Drive w/IP 20 (NEMA Type 1 Enclosure) | 21CD650B | a...d (Base Drive) | P |
| Programming, Start, Stop and Speed | Human Interface Module - Door Mounted w/LCD Full Numeric | P | e (Substitution) | P |
| No Reference to Documentation in Example | User Manual | A | f (standard) | P |
| No Reference to Special Stopping in Example | No Brake IGBT | N | g (standard) | P |
| No Reference to Special Stopping in Example | No Brake Resistor | N | h (standard) | P |
| No Reference to Filtering in Example | Filtered - No Common Mode Choke | B | i (standard) | P |
| No Reference to Communication in Example | No Communication Module | N | j (standard) | P |
| Local 115V Control | 115V Control | B | k (substitution) | P |
| No Reference to Feedback in Example | No Feedback Option | 0 | l (standard) | P |
| No Reference to Other Special in Example | Reserved for Future Options | NN | m (standard) | P |
| No Reference to Other Special in Example | Reserved for Future Options | NN | n (standard) | P |
| Conveyor - 150% Overload - HD | Heavy Duty | -HD | p (specification) | P |
| No Reference to Bypass in Example | Bypass Not Required | -B0 | r (addition) | P |
| Input Fuses | Drive Input Fusing | -P2 | r (addition) | P |
| Control Power for Drive | 115V Control Power, Drive/Options Only | -C1 | r (addition) | P |
| Internal Motor Heater | Motor Heater, Remote Power | -J8 | r (addition) | P |
| Start/Stop/Speed Reference, Selectable | H/O/A S.S. (Start/Stop/Spd. Ref.) | -S1 | r (addition) | P |
| **21CD650BPANNBNB0NNNN-HD-B0-P2-C1-J8-S1** | | | | P |

**Important:** The final lead time for the complete drive is based on the longest option lead time.

## Configured Drives Product Selection

Package includes:

- PowerFlex 700H 480V Drive
- NEMA Type 1 Freestanding Enclosure
- User Manual

**Important:** Customers that require drives with low harmonic front ends, generally will have an associated specification with their detailed requirements. Failure to ask for a customer specification, and the proper review of that specification, may result in significant price and/or delivery changes.

## 480V AC, 6 Pulse Configured Drives (1)

| 480V AC Input | | IP20, NEMA Type 1 Cat No. | | |
|---|---|---|---|---|
| Output Amps - ND (HD) (2) (3) | HP - ND (HD) | Positions a…d | Frame Size | Lead Time |
| 261 (205) | 200 (150) | 21CD261B | 9 | C |
| 300 (245) | 250 (200) | 21CD300B | 9 | C |
| 361 (300) | 300 (250) | 21CD385B | 10 | P |
| 414 (361) | 350 (300) | 21CD460B | 10 | P |
| 500 (414) | 450 (350) | 21CD500B | 10 | P |
| 590 (515) | 500 (450) | 21CD590B | 11 | P |
| 590 (590) | 500 (500) | 21CD650B | 11 | P |
| 708 (590) | 600 (500) | 21CD730B | 11 | P |
| 820 (730) | 700 (600) | 21CD820B | 12 | P |
| 920 (820) | 800 (700) | 21CD920B | 12 | P |
| 1030 (920) | 900 (800) | 21CD1K0B | 12 | P |
| 1150 (1030) | 1000 (900) | 21CD1K1B | 13 | C |
| 1300 (1150) | 1200 (1000) | 21CD1K3B | 13 | C |
| 1450 (1200) | 1250 (1000) | 21CD1K4B | 13 | C |
| 1770 (1600) | 1500 (1400) | 21CD1K7B | 14 | C |
| 2150 (1940) | 1900 (1700) | 21CD2K1B | 14 | C |
| 2700 (2300) | 2300 (2000) | 21CD2K7B | 14 | C |

(1) These drives include an input line reactor as standard.
(2) These drives have dual current ratings; one for normal duty applications, and one for heavy duty applications (in parenthesis). The drive must be operated at one rating only.
(3) The overload amps are based on system output current (ND = 110%, HD = 150%).

## 480V AC, 18 Pulse Configured Drives (Low Harmonic) (1)(2)

| 480V AC Input | | IP20, NEMA Type 1 Cat No. | | |
|---|---|---|---|---|
| Output Amps - ND (HD) (3) (4) | HP - ND (HD) | Positions a…d | Frame Size | Lead Time |
| 261 (205) | 200 (150) | 21CU261B | 9 | C |
| 300 (245) | 250 (200) | 21CU300B | 9 | C |
| 385 (300) | 300 (250) | 21CU385B | 10 | X |
| 460 (385) | 350 (300) | 21CU460B | 10 | X |
| 500 (420) | 450 (350) | 21CU500B | 10 | X |
| 590 (520) | 500 (450) | 21CU590B | 11 | X |
| 650 (590) | 500 (500) | 21CU650B | 11 | X |
| 730 (650) | 600 (500) | 21CU730B | 11 | X |
| 820 (730) | 700 (600) | 21CU820B | 12 | X |
| 920 (820) | 800 (700) | 21CU920B | 12 | X |
| 1030 (920) | 900 (800) | 21CU1K0B | 12 | X |
| 1150 (1030) | 1000 (900) | 21CU1K1B | 13 | C |
| 1300 (1150) | 1200 (1000) | 21CU1K3B | 13 | C |
| 1450 (1200) | 1250 (1000) | 21CU1K4B | 13 | C |
| 1770 (1600) | 1500 (1400) | 21CU1K7B | 14 | C |
| 2150 (1940) | 1900 (1700) | 21CU2K1B | 14 | C |
| 2700 (2300) | 2300 (2000) | 21CU2K7B | 14 | C |

(1) These drives include an auto style transformer as standard. If an isolation style transformer is preferred, please submit a custom quote request.
(2) These drives include an input line reactor as standard.
(3) These drives have dual current ratings; one for normal duty applications, and one for heavy duty applications (in parenthesis). The drive must be operated at one rating only.
(4) The overload amps are based on system output current (ND = 110%, HD = 150%).

## Factory Installed Options

### Human Interface Modules (HIM) - Position *e*

Cat. Code: 0
Drive Mounted
Blank Cover
No HIM

Cat. Code: M
Door Mounted LCD
Programmer Only

Cat. Code: P
Door Mounted
w/LCD Display,
Full Numeric Keypad

**Note**: NEMA/UL Type 12 HIMs are not available.

### Documentation

| Description | Cat. Code (Position f) | Lead Time |
|---|---|---|
| Manual (Standard) | A | P |

### Internal Brake IGBT

| Brake IGBT | Frame | Cat. Code (Position g) | Lead Time |
|---|---|---|---|
| None | 9…14 | N | P |
| Optional | 9 | Y | C |

### Brake Resistor

| Description | Cat. Code (Position h) | Lead Time |
|---|---|---|
| None | N | P |

### Internal EMC Filter and Common Mode Choke

| Drive Input Voltage | Frame | Description | Cat. Code (Position i) | Lead Time |
|---|---|---|---|---|
| 480V AC | 9-13 | with CE Filter, No Choke, No dv/dt Filter | B | P |
| 480V AC | 9 | No CE Filter, No Choke, No dv/dt Filter | N (1) | C |
| 480V AC | 14 | with CE Filter, dv/dt Filter, No Choke | E | C |

(1) For use with ungrounded or resistive grounded distribution systems.

## Internal Communication Adapters

| Description | Cat. No. (Position j) | Lead Time |
|---|---|---|
| BACnet® MS/TP RS485 Communication Adapter | 20-COMM-B | **P** |
| ControlNet™ Communication Adapter (Coax) | 20-COMM-C | P |
| DeviceNet™ Communication Adapter | 20-COMM-D | P |
| EtherNet/IP™ Communication Adapter | 20-COMM-E | P |
| HVAC Communication Adapter | 20-COMM-H | P |
| Interbus™ Communication Adapter | 20-COMM-I | P |
| LonWorks® Communication Adapter | 20-COMM-L | P |
| None | N | P |
| PROFIBUS™ DP Communication Adapter | 20-COMM-P | P |
| Remote I/O Communication Adapter | 20-COMM-R | P |
| RS485 DF1 Communication Adapter | 20-COMM-S | P |

## Control and I/O Options

| Description | Cat. Code (Position k) | Lead Time |
|---|---|---|
| 24V DC Digital Inputs (6) w/Analog I/O & 115V AC Digital Outputs (3) | A | Q |
| 115V AC Digital Inputs (6) w/Analog I/O & 115V AC Digital Outputs (3) | B | P |

## Feedback

| Description (One Required) | Cat. Code (Position l) | Lead Time |
|---|---|---|
| None | 0 | P |

## Special Options

| Description (One Required) | Cat. Code (Position m) | Lead Time |
|---|---|---|
| No Special Options | NN | P |

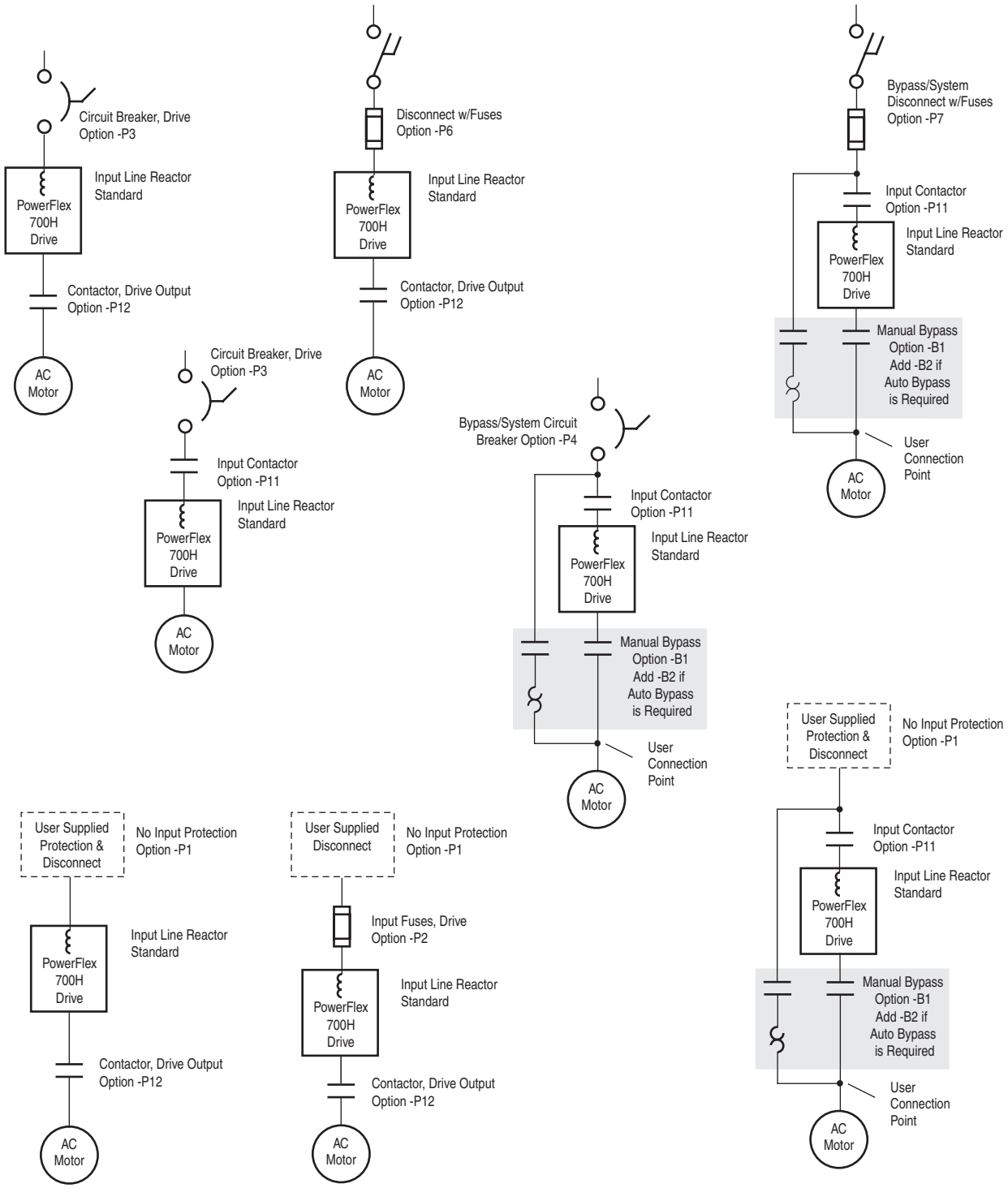
## Special Options

| Description (One Required) | Cat. Code (Position n) | Lead Time |
|---|---|---|
| No Special Options | NN | P |

## Drive Duty

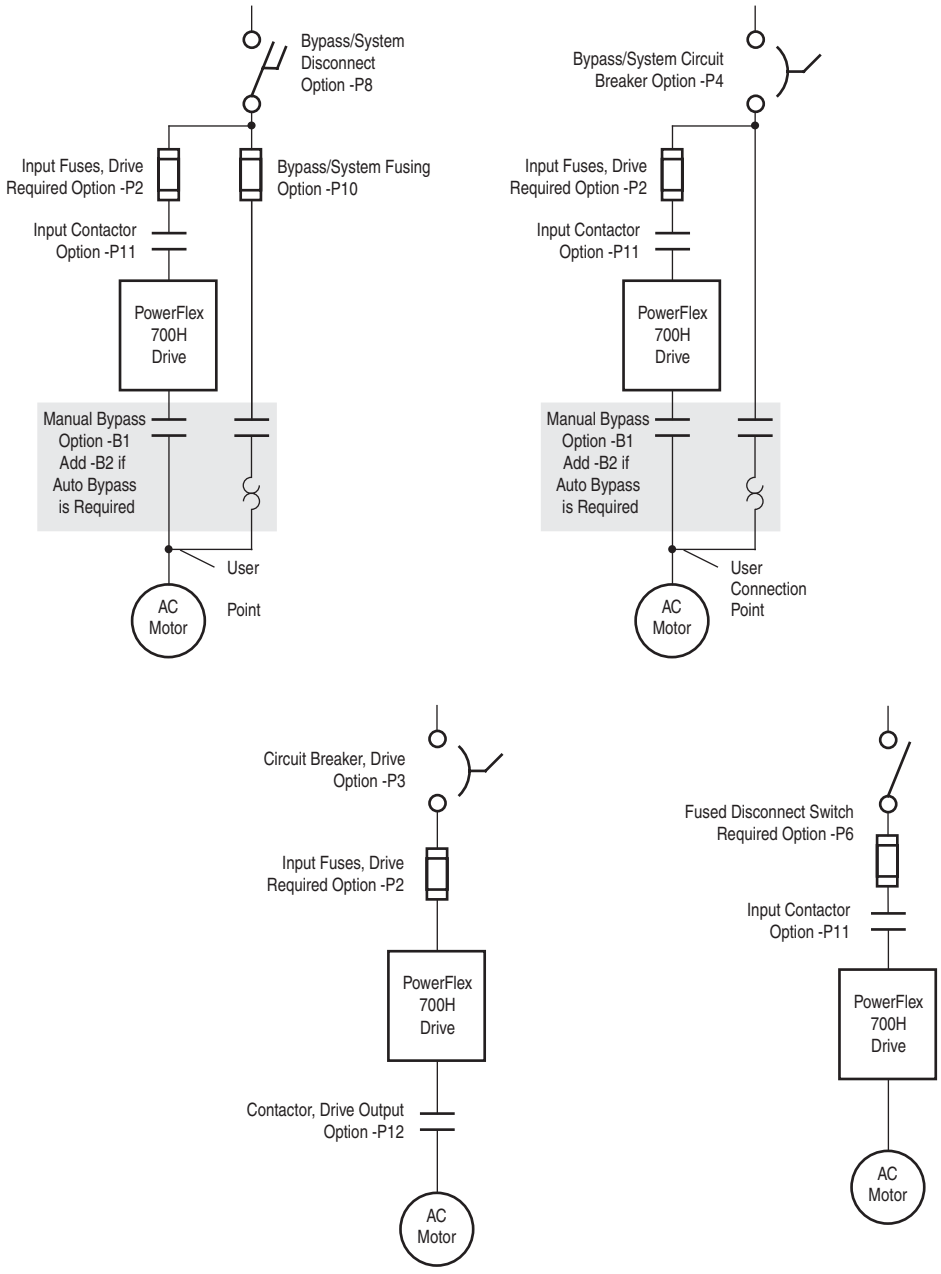
| Description (One Required) | Cat. Code (Position p) | Lead Time |
|---|---|---|
| Normal Duty | ND | P |
| Heavy Duty | HD | P |

## Sample Power Distribution Schemes - 6 Pulse Only


Circuit Breaker, Drive Option -P3
Input Line Reactor Standard
PowerFlex 700H Drive
Contactor, Drive Output Option -P12
AC Motor
Disconnect w/Fuses Option -P6
Input Line Reactor Standard
PowerFlex 700H Drive
Contactor, Drive Output Option -P12
AC Motor
Bypass/System Disconnect w/Fuses Option -P7
Input Contactor Option -P11
Input Line Reactor Standard
PowerFlex 700H Drive
Manual Bypass Option -B1 Add -B2 if Auto Bypass is Required
User Connection Point
AC Motor
Circuit Breaker, Drive Option -P3
Input Contactor Option -P11
Input Line Reactor Standard
PowerFlex 700H Drive
AC Motor
Bypass/System Circuit Breaker Option -P4
Input Contactor Option -P11
Input Line Reactor Standard
PowerFlex 700H Drive
Manual Bypass Option -B1 Add -B2 if Auto Bypass is Required
User Connection Point
AC Motor
User Supplied Protection & Disconnect
No Input Protection Option -P1
Input Contactor Option -P11
Input Line Reactor Standard
PowerFlex 700H Drive
Manual Bypass Option -B1 Add -B2 if Auto Bypass is Required
User Connection Point
AC Motor
User Supplied Protection & Disconnect
No Input Protection Option -P1
Input Line Reactor Standard
PowerFlex 700H Drive
Contactor, Drive Output Option -P12
AC Motor
User Supplied Disconnect
No Input Protection Option -P1
Input Fuses, Drive Option -P2
Input Line Reactor Standard
PowerFlex 700H Drive
Contactor, Drive Output Option -P12
AC Motor

## Sample Power Distribution Schemes - 18 Pulse Only

**Note**: Drive fusing must be specified.



## Power Disconnecting Means Options

**Important:** Customer must select one (and only one) of the following; -P1, P2, P3, P4, P6 or -P7 options. If option -P1 is selected, power disconnecting means and drive branch circuit protection must be supplied by user.

480V AC, Three-Phase

| ND (HD) Rating HP | No Input Protection (1)(2) | Input Fuses, Drive | Circuit Breaker, Drive (1) | Circuit Breaker, Drive/Bypass Mode (3) | Fused Disconnect Switch, Drive (1) | Fused Disconnect Switch, Drive Bypass Mode (3) | Disconnect Switch, No Fusing, Drive Bypass Mode (3)(4) | Input Fuse Block (No Fuses), Drive Bypass Mode (3)(5) | Lead Time |
|---|---|---|---|---|---|---|---|---|---|
| 200 (150) | Option Code -P1 | Option Code -P2 | Option Code -P3 | Option Code -P4 | Option Code -P6 | Option Code -P7 | Option Code -P8 | Option Code -P10 | P |
| 250 (200) | | | | | | | | | P |
| 300 (250) | | | | | | | | | P |
| 350 (300) | | | | | | | | | P |
| 450 (350) | | | | | | | | | P |
| 500 (450) | | | | | | | | | P |
| 500 (500) | | | | | | | | | P |
| 600 (500) | | | | | | | | | P |
| 700 (600) | | | | | | | | | P |
| 800 (700) | | | | | | | | | P |
| 900 (800)... | | | | | | | | | P |

(1) This option can not be used with Bypass.
(2) 6 Pulse drives Only.
(3) This option must be used in conjunction with a Bypass Option.
(4) 18 Pulse drives only - Lead Time is "C."
(5) Fuses must be supplied by user to match motor.

## Power and Bypass Options

**Important:** Customer must select one (and only one) of the following; -B0 or -B1 options.

480V AC, Three-Phase

| ND (HD) Rating HP | Contactor, Drive Input | Contactor, Drive Output (1)(2) | Bypass Not Required | Manual Bypass (3) | Automatic Bypass Logic (3)(4) | Lead Time |
|---|---|---|---|---|---|---|
| 200 (150) | Option Code -P11 | Option Code -P12 | Option Code -B0 | Option Code -B1/B51 | Option Code -B2/B52 | P |
| 250 (200) | | | | | | P |
| 300 (250) | | | | | | P |
| 350 (300) | | | | | | P |
| 450 (350) | | | | | | P |
| 500 (450) | | | | | | P |
| 500 (500) | | | | | | P |
| 600 (500) | | | | | | P |
| 700 (600) | | | | | | C |
| 800 (700) | | | | | | C |
| 900 (800)... | | | | | | C |

(1) An output contactor may not be chosen when Bypass is selected.
(2) This option must be used in conjunction with the Auxiliary Fault Contact option -J2.
(3) Includes a Class 10 Adjustable Overload Relay that does not require separate heater elements.
(4) Option includes "Drive-Off-Bypass" selector switch and must be used in conjunction with the Auxiliary Fault Contact option (-J2). Also requires option -B1/B51.

## Control Power Options

**Important:** Customer must select -C1 or -C5 (not both).

480V AC, Three-Phase

| ND (HD) Rating HP | 115V Control Power, Drive/Options Only | 115V Control Power, User Supplied | Lead Time |
|---|---|---|---|
| 200 (150) | Option Code -C1 | Option Code -C5 | P |
| 250 (200) | | | P |
| 300 (250) | | | P |
| 350 (300) | | | P |
| 450 (350) | | | P |
| 500 (450) | | | P |
| 500 (500) | | | P |
| 600 (500) | | | P |
| 700 (600) | | | P |
| 800 (700) | | | P |
| 900 (800)... | | | P |

## Load Reactor Options

480V AC, Three-Phase

| ND (HD) Rating HP | 3% Output Load Reactor Mounted in Enclosure (1) (2) | Lead Time |
|---|---|---|
| 200 (150) | Option Code -L2 | C |
| 250 (200) | | C |
| 300 (250) | | C |
| 350 (300) | | C |
| 450 (350) | | C |
| 500 (450) | | C |
| 500 (500) | | C |
| 600 (500) | | C |
| 700 (600) | | C |
| 800 (700) | | C |
| 900 (800)... | | C |

(1) The standard PowerFlex 700H drive has an input line reactor as standard.

(2) A 5% output reactor is available with a custom quote.

## Control and Systems Interface Options

| Description | Option Code | Lead Time |
|---|---|---|
| Analog Inputs/Outputs | | P |
| Isolated Analog Input, 0-10V DC | -N1 | P |
| Isolated Analog Input, 4-20 mA | -N2 | P |
| Isolated Analog Output, 0-10V DC | -N3 | P |
| Control Relay Option | | P |
| Control Power On | -J1 | P |
| Auxiliary Contacts, (2) Form C 2-N.O., 2-N.C. (1) | | P |
| Drive Fault | -J2 (1) | P |
| Alarm | -J3 (1) | P |
| Drive Run | -J4 (1) | P |
| At Speed | -J5 (1) | P |
| Building Management Control Interface | -N5 | P |
| Communication Options Panel Mounted | | P |
| Johnson Controls Metasys Interface | -G1 | P |

(1) Maximum of two drive digital options can be selected.
NOTE: S9 + J4 = One Digital Output
S10 + J2 = One Digital Output
S11 + J5 = One Digital Output
S12 + J3 = One Digital Output
All other combinations = One Digital Output.

## Motor Interface Options

| Description | Option Code | Lead Time |
|---|---|---|
| Motor Heater Control, Remote Power 180W Max.) | -J8/J58 (1) | P |

(1) Requires user supplied control power.

## Operator Devices - Door Mounted

| Description | Option Code | Lead Time |
|---|---|---|
| H/O/A Selector Switch (Start/Stop/Spd. Ref.) | -S1/S51 (1) | P |
| Run Pilot Light | -S9/S59 (2) | P |
| Drive Fault Pilot Light | -S10/S60 (2) | P |
| At Speed Pilot Light | -S11/S61 (2) | P |
| Drive Alarm Pilot Light | -S12/S62 (2) | P |
| Control Power On Pilot Light | -S13/S63 | P |
| Drive & Bypass Mode Pilot Lights | -S14/S64 (3) | P |
| Bypass Mode & Auto Bypass En. Pilot Lights | -S15/S65 (4) | P |
| Drive Disable Mushroom Push Button | -S16/S66 (1) | P |
| Motor Fault Pilot Light | -S17/S67 (3) | P |
| Speed Potentiometer (1-Turn) | -S18/S68 | P |

(1) Does not require option -C1 or user supplied power (-C5) if 24V AC/DC interface is selected. Requires option -C1 or user supplied power (-C5), if 115V AC interface is selected.
(2) Maximum of two drive digital options can be selected.
NOTE: S9 + J4 = One Digital Output
S10 + J2 = One Digital Output
S11 + J5 = One Digital Output
S12 + J3 = One Digital Output
All other combinations = One Digital Output.
(3) Option available when -B1/B51 is selected.
(4) Option available when -B2/B52 is selected.

## Meters - Door Mounted

| Description | Option Code | Lead Time |
|---|---|---|
| Drive/Bypass Motor Run Time Meter (Elapsed Hours) Non-Resettable | -M3 | P |

## Enclosure Options

| Description | Option Code | Lead Time |
|---|---|---|
| Enclosure Space Heater, Remote Power | -E4 | C |
| Nameplate, Door Mounted 158.8 x 50.8 mm (6.25 x 2 in.) white Lamacoid with black letters) | -E9 (1) | P |
| UL Type 3/4/44/12 | Consult Factory | C |

(1) Actual message to be defined by user at order entry, otherwise will be supplied blank.

## Drawing and Test Options (For Configured Drives Only)

| Description - One Set of … | Cat. No. |
|---|---|
| **Manufacturing Drawings** 279 x 432 mm (11 x 17 in.)<br>One set of schematics –<br>**"Information Only - Manufacture Proceeding"**<br>Not to be used as Approval Drawings, available after order is released from engineering. | |
| Electronic Drawings (Requires E-mail Address) | 1301-MFDWG-E |
| | |
| **Final Drawings (as shipped)** 279 x 432 mm (11 x 17 in.)<br>One set of schematics –<br>**"Copy of Drawings that Shipped with the Job"** | |
| Electronic Drawings (Requires E-mail Address) | 1301-FINDWG-E |
| Test Report, Drive Only | 1301-TESTR-E |
| | |
| **Approval Drawings** 279 x 432 mm (11 x 17 in.)<br>One set of schematics –<br>**"Manufacture Held Until Approved Prints are Received"** | |
| Electronic Drawings (Requires E-mail Address) | 1301-APPDWG-E |
| | |
| **As Commissioned Drawings** 279 x 432 mm (11 x 17 in.)<br>One set of schematics –<br>**"Provided after Field Changes are Returned to the Factory"** | |
| Electronic Drawings (Requires E-mail Address) | 1301-COMDWG-E |
| | |
| **Analysis, Testing and Test Reports** | |
| Basic Harmonic Analysis - Basic calculations and preliminary analysis from one line power distribution diagram. | 1301-HARM1 |
| Complete Harmonic Analysis - Detailed harmonic spectrum analysis and a written report. | 1301-HARM2 |
| Witness Test, User Viewing of Rockwell Automation Standard Test Procedures | 1301-WT (1) |

(1) Includes viewing Rockwell Automation standard test only. Any special requirements must be reviewed by Rockwell Automation for acceptance and possible price changes. Pricing is per drive.

## Configured Drives Codes and Standards

| Code/Standard | | Action |
|---|---|---|
| **CE (1) (European Conformance Standard)** | CE | Consult the factory with requirements to meet the separate Low Voltage and/or EMC directives. |
| **IEEE519 (1) (Harmonic Distortion Levels)** | | Provide a one-line power distribution drawing, and the associated specification to the factory, for review. If an 18 pulse drive is being utilized, the drive will automatically meet IEEE519 at the drive input terminals (no power distribution review is required). |
| **UL, c-UL** | c UL US LISTED | This program can provide UL panel recognition from the factory by adding a "-UL" to the catalog string. There is no charge for this option. |

(1) Custom Drives Program Only - Request quote.

## Option Selection Reference Guide - 6 Pulse

Required Options:

- Normal Duty or Heavy Duty
- Power Disconnecting Means or No Power Disconnecting Means
- Bypass or No Bypass
- Control Power or No Control Power when dependent options are selected

Base Drive (6 Pulse)

| Description | Must be Used with . . . | Cannot be Used with . . . |
|---|---|---|
| Drive (position a) | 21C | |
| Input Voltage (position b) | D Only | |
| Rating (position c) | One of the ratings shown | |
| Enclosure (position d) | One of A or B | |
| HIM (position e) | One of M, P or 0 | |
| Documentation (position f) | A | |
| Brake IGBT (position g) | One of Y or N (N standard) | |
| Brake Resistor (position h) | N | |
| Emission (position i) | One of B or N | |
| Comm Slot (position j) | C, D, E, H, I, L, N (Std.), P, R, S | More than One Drive Mounted Comm Option |
| I/O (position k) | One of A or B | |
| Feedback (position l) | 0 | |
| Reserved (position m) | NN | Applications Requiring Feedback |
| Reserved (position n) | NN | |
| Duty (position p) | One of ND or HD | |

Required Options (6 Pulse)

| Description | Must be Used with . . . | Cannot be Used with . . . |
|---|---|---|
| -B0 | One of -B0 or B1/B51 Required | -B1/B51, B2//B52 |
| -B1/B51 | One of -B0 or B1/B51 Required | -B0, L2, L4, P2, P3, P6, P12 |
| -C1 | One of -C1 or C5 Required | -C5 |
| -C5 | One of -C1 or C5 Required | -C1 |
| -P1 | One of -P1, P2, P3, P4, P6 or P7 Required | -P2, P3, P4, P6, P7 |
| -P2 | One of -P1, P2, P3, P4, P6 or P7 Required | -P1, P3, P4, P6, P7 |
| -P3 | One of -P1, P2, P3, P4, P6 or P7 Required | -P1, P2, P4, P6, P7, B1 |
| -P4 | One of -P1, P2, P3, P4, P6 or P7 Required, -B1 | -P1, P2, P3, P6, P7 |
| -P6 | One of -P1, P2, P3, P4, P6 or P7 Required | -P1, P2, P3, P4, P7, B1 |
| -P7 | One of -P1, P2, P3, P4, P6 or P7 Required, -B1 | -P1, P2, P3, P4, P6 |

Non-Required Options (6 Pulse)

| Description | Must be Used with . . . | Cannot be Used with . . . |
|---|---|---|
| -B2/B52 | -B1/B51 & J2 | -B0, P12 |
| -E4 | | |
| -E9 | Customer Supplies Message | |
| -G1 | | |
| -J1 | | |
| -J2 | | Only 2 drive digital outputs |
| -J3 | | Only 2 drive digital outputs |
| -J4 | | Only 2 drive digital outputs |
| -J5 | | Only 2 drive digital outputs |
| -J8/J58 | -J4 | |
| -L2 | | |
| -M3 | -J4 | |
| -M5 | | |
| -N1 | | |
| -N2 | | -S18/S68 |
| -N3 | | |
| -N5 | -S1/S51 | |
| -P11 | | Requires Custom Quote with P12 |
| -P12 | -J2 | -B1/B51, B2/B52, Requires Custom Quote with P11 |
| -S1/S51 | | |
| -S9/S59 | Only 2 drive digital outputs | Only 2 drive digital outputs |
| -S10/S60 | Only 2 drive digital outputs | Only 2 drive digital outputs |
| -S11/S61 | Only 2 drive digital outputs | Only 2 drive digital outputs |
| -S12/S62 | Only 2 drive digital outputs | Only 2 drive digital outputs |
| -S13/S63 | | |
| -S14/S64 | -B1/B51 | -S15/S65 |
| -S15/S65 | -B1/B51, B2/B52 | -S14/S64 |
| -S16/S66 | | |
| -S17/S67 | -B1/B51 | |
| -S18/S68 | | -N2 |

## Option Selection Reference Guide - 18 Pulse

Required Options:

- Normal Duty or Heavy Duty
- Drive Input Fusing
- Bypass or No Bypass
- Control Power or No Control Power when dependent options are selected

Base Drive (18 Pulse)

| Description | Must be Used with . . . | Cannot be Used with . . . |
|---|---|---|
| Drive (position a) | 21C | |
| Input Voltage (position b) | U | |
| Rating (position c) | One of the ratings shown | |
| Enclosure (position d) | B Only | |
| HIM (position e) | One of 0, 3, 5, A, C, E, F, G, J, K or L | |
| Documentation (position f) | A | |
| Brake IGBT (position g) | One of Y or N | |
| Brake Resistor (position h) | N or Y | |
| Emission (position i) | One of C or N | |
| Comm Slot (position j) | C, D, E, H, I, L, N (Std.), P, R, S | More than One Drive Mounted Comm Option |
| I/O (position k) | One of C or D | |
| Feedback (position l) | 0 or 1 | |
| Reserved (position m) | NN | Applications Requiring Feedback |
| Reserved (position n) | NN | |
| Duty (position p) | One of ND or HD | |

Required Options (18 Pulse)

| Description | Must be Used with . . . | Cannot be Used with . . . |
|---|---|---|
| -B0 (One of B0, B1/B51 Required) | One of -B0 or B1/B51 Required | -B1/B51, P4, P8, P10 |
| -B1/B51 (One of B0, B1/B51 Required) | One of -C1 or C5 and One of -P10 or P4, P4 & P10 or P8 & P10 | -B0, B1/B51, B2/B52, P12, S1/S51…S18/S68, P8 Only |
| -C1 (One of C1 or C5 Required) | | -C5 |
| -C5 (One of C1 or C5 Required) | | -C1 |
| -P2 (Default) | | -P6 |
| -P3 (Only One Disconnect Device Allowed) | -P2 | -P4, P6, P8 |
| -P4 (Only One Disconnect Device Allowed) | -B1/B51, P2 | -P3, P6, P8, B0 |
| -P6 (Only One Disconnect Device Allowed) | | -P2, P3, P4, P8 |
| -P8 (Only One Disconnect Device Allowed) | -P10, P2 | -P3, P4, P6, B0 |
| -P10 | -P2 or P6 | -B0 |

Non-Required Options (18 Pulse)

| Description | Must be Used with . . . | Cannot be Used with . . . |
|---|---|---|
| -B2/B52 | -B1/B51 & J2 | -B0, B1/B51, B2/B52, P12 |
| -E9 | Customer Supplies Message | |
| -G1 | | HIM Codes 3, A…G, Vector Control I/O (C or D) |
| -J1 | | |
| -J2 | | Only 2 drive digital outputs |
| -J3 | | Only 2 drive digital outputs |
| -J4 | | Only 2 drive digital outputs |
| -J5 | | Only 2 drive digital outputs |
| -J8/J58 | -J4 | -J8/58, S1/S51…S18/S68 |
| -L2 | | |
| -M3 | -J4 | |
| -N1 | | |
| -N2 | | -S18/S68 |
| -N3 | | |

| Description | Must be Used with . . . | Cannot be Used with . . . |
|---|---|---|
| -N5 | -S1/S51 | |
| -P11 | | |
| -P12 | -J2 | -B1/B51 |
| -S1/S51 | | -B1/B51, S1/S51…S18/S68 |
| -S9/S59 | Only 2 drive digital outputs | Only 2 drive digital outputs |
| -S10/S60 | Only 2 drive digital outputs | Only 2 drive digital outputs |
| -S11/S61 | Only 2 drive digital outputs | Only 2 drive digital outputs |
| -S12/S62 | Only 2 drive digital outputs | Only 2 drive digital outputs |
| -S13/S63 | | |
| -S14/S64 | -B1/B51 | -S15/S65 |
| -S15/S65 | -B1/B51 & B2/B52 | -S14/S64 |
| -S16/S66 | | |
| -S17/S67 | -B1/B51 | |
| -S18/S68 | | -N2 |

**Notes:**

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